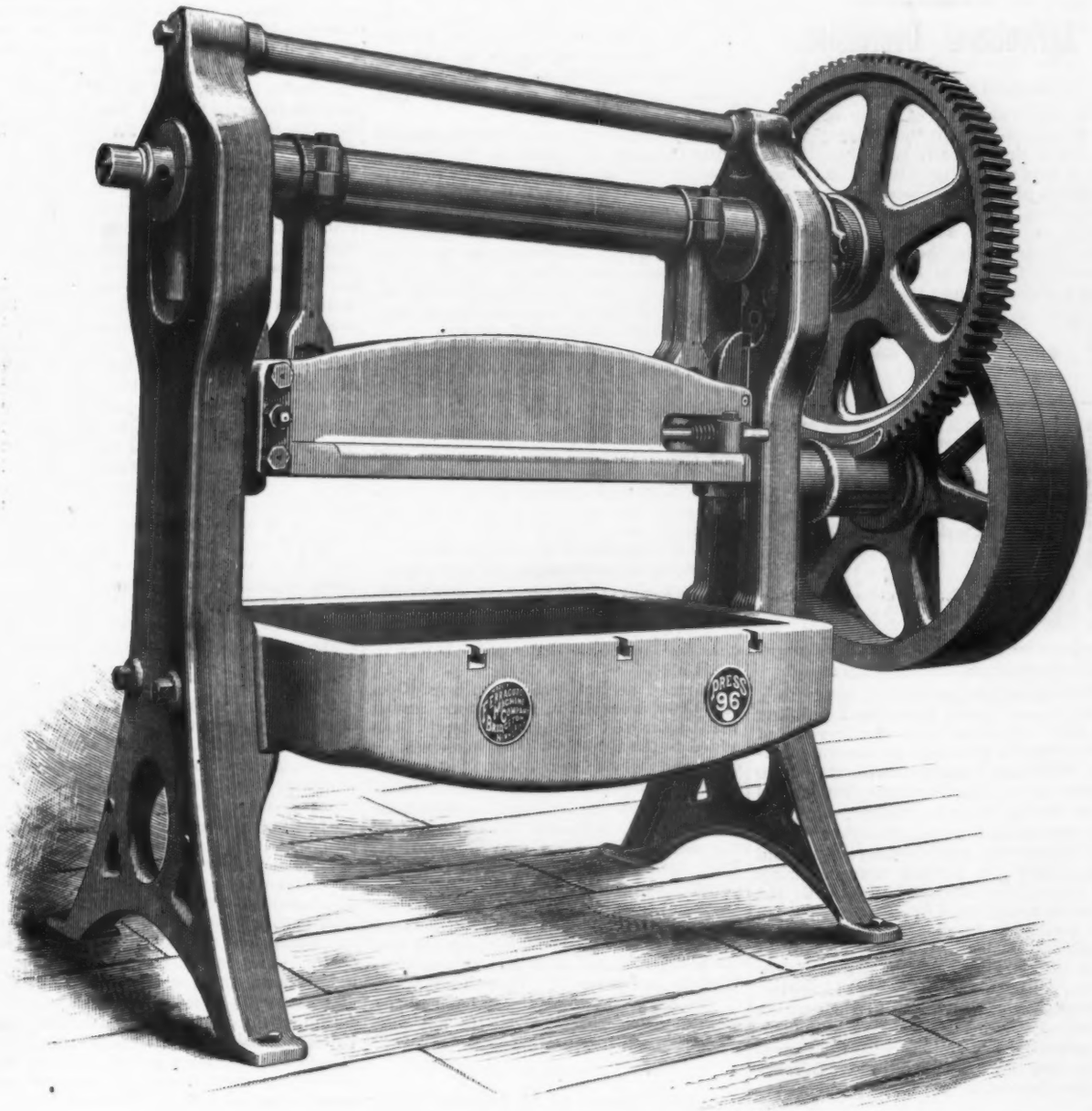
THE IRON AGE

THURSDAY, APRIL 10, 1890.

Power Press.

The Ferracute Machine Company, of Bridgeton, N. J., recently made the stamping of the round number 2000 on a large power press the occasion for a social gathering, participated in by employers and employees with their lady friends, the scene of the festivities being the well-appointed shops of the company. The promoters of the enterprise were at first doubtful whether Vulcan and Terpsichore could be made to meet on a common footing, but the success of the affair settled the question at least for such a "meet" at the Ferracute. The buildings are pleasantly situated on East Lake, and on the night in question presented a brilliant appearance. The company have their own incandescent lighting plant, and the many electric lights, reinforced by numerous Chinese lanterns, the whole being reflected on the lake, made a picture not easily forgotten. The pronounced success of the entertainment shows that it is admirable policy to occasionally make a machine shop perform social duties.

A brief description of the works will prove interesting. On the first floor of the office building are offices devoted to the use of the president, secretary, stenographer and bookkeepers and a room fitted up with shelving for office supplies. The drafting-room is a large, well-lighted apartment on the second floor of same building, and adjoining is the laboratory and photographing room, the latter fitted with dark-room for developing negatives, bath for large blue prints, &c. The second floor of the main shop contains a coat-room fitted with hooks (each space being numbered) for the use of the employees. The die designer has an office on this floor, but most of the remaining space is utilized by the die department, the machine tools used in the construction of dies being numerous, but smaller and lighter than similar tools in the press department. In this room dies are under construction for a number of articles, such as fruit-jar covers, fruit-can tops and bottoms; ordinary tinware, such as coffee pots, &c., and heavy work in sheet steel, such as parts of buggies, &c. The die shop is connected with the second floor of an adjoining building by a bridge. Crossing this bridge and opening a door at its terminus is found the pattern shop, a large room fitted up with wood-working machinery of all kinds. The forging shop has a building to itself, and contains steam and drop hammers and a number of forges and furnaces. In the erecting shop are some heavy machine tools placed near the sides of the building, the central space being devoted to the erection of the larger presses and other machines.



POWER PRESS BUILT BY THE FERRACUTE MACHINE COMPANY.

We here present an engraving of the press above referred to. It is catalogued as Press 96. The extreme hight of the press is 8 feet; floor space occupied, 9 feet 8 inches by 4 feet; hole in bed, 54 x

36 inches; hight bed to ram at top of stroke and adjustment, 14 inches; stroke of ram, 2 inches; adjustment of ram, 3 inches; diameter of fly-wheel and pulley, 44 inches, and face of each, 7 inches; pressure exerted in punching, about 85 tons; weight, about 12,000 pounds. Presses of this size and style are used for cutting out shovels, spades, windmill fans, circular saws, parts of agricultural implements, &c., from sheet iron or steel up to $\frac{3}{16}$ inch or $\frac{1}{4}$ inch thick. The machine shown contains an improved form of clutch and ram adjustment, and taken as a whole has the appearance of a well-proportioned and carefully designed power press.

Agricultural Depression.

(Concluded from page 543, April 3.)

The following table of prices of beeves in Chicago shows that the present values are lower than in any year since the export of beef was inaugurated, with the sole exception of 1879. Prices increased till 1884, when they were highest, and fell heavily in 1886, advancing slightly in 1887, except as to the extra grade, and recovering further in 1888, only to continue a decline during the past two years:

Beef cattle.	Extra.		Choice.		Good.		Medium.	
	$		$		$		$	
1876	.....		5.25 to 4.75		4.50 to 5.10		4.00 to 4.50	
1877	.....	.....	5.00	5.50	4.50	4.80	3.80	4.40
1878	5.15 to 5.40		4.50	4.90	4.00	4.40	3.50	3.85
1879	4.60	5.00	4.10	4.35	3.66	4.00	3.00	3.50
1880	5.00	5.25	4.60	4.75	.....	.....	3.50*	4.40
1881	5.75	6.25	4.85	5.40	.....	.....	3.75*	4.65
1882	6.50	6.85	5.85	6.35	4.50	5.15	.....	. .
1883	6.25	6.50	5.80	6.10	5.40	5.70	4.40	5.00
1884	7.00	7.25	6 30	6.40	6.00	6.25	4.50	5.00
1885	6.65	6.85	6.25	6.60	5.75	6 10	5.00	5.50
1886	5.17	5.70	4.30	5.00	3.85	4.55	3.50	4.15
1887	5.00	5.15	4.75	5.00	4.20	4.50	3.75	4.10
1888	5.25	5.50	4.85	5.15	4.25	4.60	4.00	4.20
1889	5.00	5.25	4.65	4.90	4.25	4.50	3.65	4.00
1890	4.90	5.20	4.50	4.75	4.06	4.40	3.25	3.90

* Good to medium includes two grades.

Thus the staple products of agriculture, by increase of farms, by railroad building and land settlement, and the increase of agricultural implements, are grown to excess, while other products with which our farmers are not familiar are neglected, and left to foreign labor to produce, while our own rural labor is only partially employed, or else is crowding production of these old staples, and still further lowering prices and intensifying dissatisfaction with the results of agricultural effort.

It is futile to attempt to defy the law of supply and demand. So long as farmers insist on growing only the bread grains, cotton, tobacco, and cattle, and to neglect other products which are needed, which we import at a cost of more than $200,000,000 annually, just so long will the lamentation over low prices continue. Diversification is essential to agricultural salvation.

THE MIDDLEMAN.

There is a further cause of low prices, which farmers should understand, very difficult to remedy, demanding serious consideration and wise action It is found in the combination of carriers and middlemen to absorb a large share of the proceeds of the sale of farm products. Beeves are sold by growers for seven-tenths to three-fourths of the prices of a few years ago, and the meat is sold to consumers in the retail markets at little if any reduction from the highest prices of the last 20 years. For instance, prime rib roasts have been sold in Washington during that period for 20 cents per pound, and sirloin steaks for the same. There has been little variation, as a general rule, in the prices of the less valuable cuts. The same complaint comes from consumers in other cities. All kinds of meats, vegetables and fruits furnish similarly subsistence to armies of middlemen. Milk is bought from farms, for the supply of New York, for less than 3 cents per quart, and sold to consumers for 8 cents. The hucksters of city markets often get as much for handling a product, in a single day, as the grower obtained for producing it during a season's growth. The contrast between the price of fruit on the farm and in a city market is a suggestion of greed and extortion. In many markets the prices of variable products are fixed for the day at early dawn, not with reference to their cost but in view of the comparative quantity, to squeeze from the buyer the last cent that his patience will endure without declining a purchase. The poor are robbed still further when a commodity costs 25 cents a peck, by a charge of 15 cents for a half peck, which is a clear penalty of 20 per cent. for buying in small quantities.

The army of dealers in futures who bet upon the price of grain in the coming months, and bend their energies to shape prices to suit their deals, do other injury than merely to prey on each other; they disturb the natural flow of trade and check exportation by a temporary rise in values, which leads inevitably to lower prices, later and greater fluctuations, which are the meat and life of this class and the bane of the farmer's market for wheat.

There may be minor causes of depression which have not yet been considered, but they are impotent and unimportant in comparison with those outlined. The main difficulty is, there is overproduction of a few staples and quite too limited a list of rural products. There is too much hog and hominy and a narrow range of delicacies that are so eagerly sought by the buyer and so profitable to the producer. There is too much rural labor unemployed, and too much mechanical and manufacturing labor idle in both cases for lack of sufficient variety, and because $500,000,000 or $600,000,000 are spent in foreign countries for products that could better be made here.

During the last ten years more than 2,000,000 workers in agriculture, armed with improved implements, have been added to the 7,000,000 that were making corn and wheat and cotton; and shall they still insist on the same limited range of effort, walk in the same furrows their father turned, and seek to live and die in the same overdone and profitless routine? If so, agricultural depression will become chronic and intensified to a degree unknown at present. Shall farmers hug the chains of their dependence, limit the range of their industry, refuse to strike out into the new paths, and sink into comparative idleness and poverty? There are millions of them too intelligent and enterprising and ambitious to co-operate in any such scheme of self-degradation.

Judge Patterson, of the Supreme Court, in this city, has just handed down a decision upon a question of some interest to corporations. The decision concerns the right of one corporation to use a title closely resembling that of another and rival corporation. The Employers' Liability Assurance Corporation asked for a permanent injunction against the Employers' Liabiiitiy Insurance Company of the United States, restraining the defendant corporation from using the words "Employers' Liability" in their title, on the ground that the exclusive right to use them was in the plaintiff, and that their use would produce a confusion, and result in injury to the plaintiff. Judge Patterson refused the injunction, holding that the words referred to were the general designation of a certain kind of business, and expressed neither proprietorship nor origin, and that the defendant had fairly cleared itself of the charge of attempted imitation of the plaintiff's title. As to the confusion feared, he said the other words of the two titles were sufficiently dissimilar to prevent that.

The Bounty Bill.

The Bounty bill, designed to please the American merchant marine in the foreign trade on an equality with that of other nations, has been reported by the House Committee, together with a report of the minority. The only amendment of importance fixes the rate of bounty at 15 cents per ton for 500 miles sailed or for a less distance, and 15 cents per ton for the next 500 miles, and 30 cents per ton per 1000 miles in excess of the first 1000 miles. The estimate of the committee is that under the terms of the bill the payment in bounties for the first year would be, for sail vessels, $1,644,818; steam vessels, $1,715,922; total, $3,360,741. The annual increase would be about 5 per cent., so that it would be eight years before the annual bounty would amount to $5,000,000. The minority express the opinion that bounties will not restore our shipping interest, and believe that the most effective way to bring about the revival of American shipping industry is for Congress (1) to place all materials that go into the construction of ships upon the free list; (2) to repeal all laws in restraint of trade, and (3) to repeal our restrictive navigation laws and permit our merchants to buy their ships where they can buy them the cheapest and sail them under the American flag. In view of the foregoing facts the minority recommends that the bill for the free admission to American registry of ships built abroad be substituted for the bill repealed by the committee. It is reported that a syndicate is being organized in Boston for the purpose of building 20 iron steamships to engage in a general coastwise foreign trade as soon as the Tonnage bill becomes a law.

Preliminary work has been commenced at the Navy Department on the plans for the harbor defense ram authorized by the last Congress. The law provides for a ram of the type approved by the Naval Advisory Board in its report of November 7, 1881. This is what is known as the Ammen ram, being designed by Rear Admiral Daniel Ammen, retired. Calculations are being made for a vessel of 2700 tons displacement, 262 feet long on the water line, with a 17-foot projecting ram below the water line, 46 feet beam and 17 feet draft. The speed being figured upon is 18 knots, which would require engines of about 6000 horse-power. If built according to Admiral Ammen's ideas, the vessel will carry no guns, and will rely for offense solely on her ram. Thus she would not have to carry the weight of guns and ammunition, and, being intended for harbor defense, would not have to carry a great supply of coal and stores, and consequently most of her weight could be divided between hull and machinery. This being the case, she ought to have much more than 18 knots speed. She ought to be fast enough to overtake any vessel liable to be sent against her.

The Board of Bureau Chiefs of the Navy Department has recommended to Secretary Tracy the adoption of the plan proposed by Engineer-in-Chief Melville for measuring the speed of the new cruisers, for which speed premiums are to be paid. The speed will be calculated by first ascertaining the number of revolutions made per knot at different speeds, and then from the whole number of revolutions made in a four-hours' run the average speed will be calculated.

Physical Properties of Iron and Steel at Higher Temperature.

BY JAMES E. HOWARD, WATERTOWN ARSENAL, WATERTOWN, MASS.

Recent experiments made at the Watertown Arsenal furnish the results here presented. They embrace tests with different grades of steel, wrought iron and cast iron, the complete details of which are recorded in the annual reports of tests of metals.—*Congressional Documents.*

Co-efficients of Expansion by Heat.—These values were determined by direct measurements of the expansion of the metal, observed upon a specimen length of 35 inches and exposed to a range of temperature of about 210° F., as shown by mercurial thermometers. The gauged lengths on the specimens were defined by small drilled and countersunk holes, the distances between them being measured by means of a micrometer mounted on a suitable frame, which was provided with conical points made to enter the holes in the specimen, while the latter was immersed in a bath at a distance below the surface of the liquid.

The experimental bars were first measured in a bath of ice water and again in a bath of hot oil, and generally they were returned to the cold bath to be remeasured, for the purpose of veryfying to observations previously made and to ascertain whether any permanent changes in length had occurred in the meantime.

A standard bar, prepared with drilled and countersunk holes 35 inches apart, was kept in the cold bath, and the micrometer was compared with this standard before and after each reading was taken on an experimental bar. The specimens were kept in each bath at least two hours before measuring.

The average values obtained with the first series of bars are exhibited in Table 1.

In this series the steel specimens were turned down in the lathe to 1 inch diameter from 1¼-inch hot-rolled bars. The wrought iron and cast iron to 1⅛ inch diameter, and the copper bar was 1¼-inch diameter.

Subsequent determinations with a second series of steels gave the results shown in Table 2.

These results show the highest co-efficients of expansion for the wrought iron and mild steels, lower values for the harder steels and lowest for the cast iron. In the first series of steels the variations in the co-efficients approximately followed the carbon and also the quantity of iron present. In the second series other elements took a wider range, and here the indications point strongly to the conclusion that carbon has the greater influence upon the rate of expansion.

There was no marked difference in the rate of expansion of wrought iron which had been overstrained nearly to its limit of rupture, and the same metal annealed. The above co-efficients for steel refer to annealed or hot-rolled metal.

Further experiments were made for the purpose of determining the effect of hardening or sudden quenching from a high temperature, first made with oil and then with water as the quenching liquid. Ten steel bars, representing the several grades of meltal in the first series, were heated bright cherry-red and quenched in oil at 80° F. The determinations following this treatment were made beginning with the bars in the ice-water bath. After measuring they were transferred to the hot bath, the maximum tempreature of which reached 235° F., and again returned to the cold bath and remeasured.

Under rising temperature the behavior of the high carbon bars appeared erratic, but this was explained when they were remeasured in the cold bath. It was found that bars Nos. 9 A and 10 A, containing 0.89 and 0.97 per cent. carbon, respectively, were permanently shortened on their gauged lengths the amounts 0.0037 inch and 0.0047 inch below the lengths when measured in the cold bath succeeding the oil quenching, but preceding the heating in the oil bath. With the exception of two specimens the other bars were shortened by the treatment, but only slight amounts.

Just when this permanent diminution in length occurred is not known, but if this behavior indicates an increase in density or the release and readjustment of internal strains, probably the rearrangement was facilitated by and consequently took place during the higher temperatures of the hot bath, and while the metal was then expanded certain other forces contributed towards shortening the bars in opposition to the direct effect of the heating. The co-efficients under falling temperature were normal or nearly so; thus, we observe that moderate heating restored the disturbed state of the metal due to oil-quenching from the temperature above stated.

The same bars were again heated bright cherry-red and quenched in water at 50° to 55° F. The phenomena previously observed were now displayed and in a more marked degree than before. The co-efficient of expansion under rising temperature, influenced by the permanent diminution in length going on simultaneously with the heating, was apparently so low as 0.0000023564 in bar No. 10 A. The maximum temperature of the hot bath in this instance was 233.7° F.

When returned to the cold bath all the bars were found shortened amounts ranging from 0.0010 to 0.0343 inch, the greater diminution occurring with the high-temper metal. Returning the bars to the cold bath and computing the co-efficients from the contractions then observed, it was found that bar No. 10 A had the co-efficient 0.0000072958, and three other bars had co-efficients above 0.000007.

Whereas, in the annealed bars the co-efficients diminish with increase of carbon, the hardened bars divested of the element of permanent diminution in length, display a decided elevation in this value, reaching a maximum in the high temper bars, but with little if any gain in the mild steels. We do not infer that an increase in the rate of expansion of mild steel is unattainable. Had the quenching been done from higher temperatures and in a more energetic quenching liquid, the results might or might not have been different.

Again exposing the bars to the temperature 300° F. for a period of six hours, cooling and reheating in the bath to 243° and then cooling, there was a further diminution in lengths, most conspicuous in the high temper bars, yet their co-effi-

Metal.	Marks.	Chemical composition. C.	Mn.	Si.	Fa. by difference.	Co-efficient of expansion. Per degree Fahr. per unit of length.
Wrought iron						.0000067302
Steel	1a	.09	.11	....	99.80	.0000067561
Steel	2a	.20	.45	....	99.35	.0000066259
Steel	3a	.31	.57	....	99.12	.0000065149
Steel	4a	.37	.70	....	98.93	.0000066597
Steel	5a	.51	.58	.02	98.89	.0000066202
Steel	6a	.57	.93	.07	98.43	.0000063891
Steel	7a	.71	.58	.08	98.63	.0000064716
Steel	8a	.81	.56	.17	98.46	.0000062167
Steel	9a	.89	.57	.19	98.35	.0000062335
Steel	10a	.97	.80	.28	97.95	.0000061700
Cast (gun) iron						.0000059261
Drawn copper						.0000091286

Table I.—Co-efficients of Expansion.—First Series.

Marks.	Chemical composition. C.	Mn.	Si.	S.	P.	Cu.	Fa. by difference.	Co-efficient of expansion. Per degree Fahr. per unit of length.
1b	.17	1.13	.023	.122	.079	.04	98.436	.0000067886
2b	.20	.69	.037	.13	.078	.26	98.605	.0000068567
3b	.21	1.26	.08	.14	.059	0	98.251	.0000067623
4b	.26	1.07	.11	.096	.08	.047	98.337	.0000067476
6b	.26	1.26	.07	.112	.06	.098	98.200	.0000067102
7b	.26	1.28	.07	.115	.062	.035	98.178	.0000067175
8b	.28	1.23	.09	.168	.09	.178	97.964	.0000067794
9b	.43	.97	.05	.08	.096	.024	98.350	.0000066124
10b	.43	1.08	.037	.08	.114	.233	98.026	.0000066377
11b	.53	.75	.10	.078	.087	.174	98.281	.0000064181
12b	.55	1.02	.05	.078	.12	.15	98.032	.0000066122
14b	.72	.70	.18	.07	.13	.23	97.970	.0000064330
15b	.72	.76	.20	.056	.086	.186	97.992	.0000063080
16b	.79	.86	.21	.084	.093	.096	97.867	.0000063562
17b	1.07	.07	.13	.01	.018	.006	98.696	.0000061528
18b	1.08	.12	.19	.011	.02	Tr.	98.579	.0000061702
19b	1.12	.10	.09	.013	.018	Tr.	98.659	.0000062589
20b	1.14	.10	.15	Tr.	.018	Tr.	98.592	.0000060716
21b	1.17	.10	.10	Tr.	.018	0	98.612	.0000061332
22b	1.31	.13	.19	.011	.026	Tr.	98.333	.0000061478
5b	.26	1.22	.14	.107	.072	.024	98.177	Not determ'ed

Table II.—Co efficients of Expansion.—Second Series.

cients continued highest. The lower carbon bars had more nearly reached a state of repose or molecular equilibrium at these moderate temperatures than the high temper bars, if their smaller sets may be thus interpreted.

Finally the bars were annealed by heating bright cherry-red and cooling in pine shavings, which restored the metal to the rate of expansion first observed. The details of these determinations have been entered upon somewhat at length because quite opposite opinions seem to prevail concerning the relative rates of expansion of different grades of steel, much light being thrown upon the subject by these tests

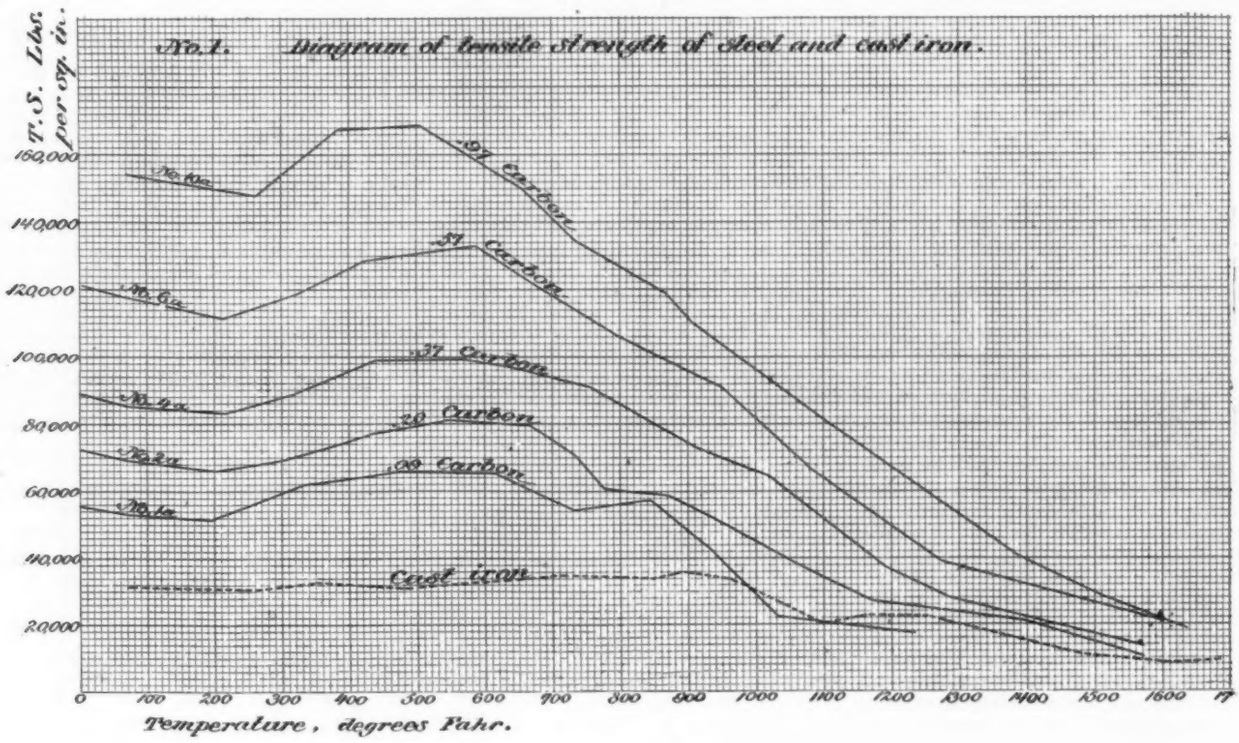
The Moduli of Elasticity.—The moduli of elasticity were obtained with the first series of bars at temperatures from atmospheric up to 495° F. The specimens were strained in an oil bath, the temperature being taken with mercurial thermometers, and the elongations measured by means of a micrometer mounted in the same manner as when used in determining the coefficients of expansion. The results show that the modurus of elasticity diminishes with increase of temperature. The average rate of reduction, taken over a range of about 400°, was from 1359 to 8294 pounds per square inch per degree F. The indications were far from being uniform, but taken as they stand it appeers that there is a more rapid rate of reduction in the wrought iron and mild steel than in the harder metal and a less rapid rate of reduction in some of the cast irons.

Two specimens of the second series were experimented upon at higher temperatures. The heating of these bars was done in a hot air muffle, estimating the temperature from the expansion of the metal observed between reference points 10 inches apart. Bar No. 5 B displayed a modulus of elasticity of 29,000,000 pounds per square inch at 70° F., which was lowered to 16,980,000 pounds per square inch at 1353° F. No. 17 B at 70° gave 29,771,000 pounds per square inch and at 1400° only 14,173,000 pounds per square inch. Determinations at intermediate temperatures showed that the reduction did not take place at a uniform rate with increase of temperature, or at least that the rate of reduction of the modulus of elasticity was not proportional to the rate of expansion by heat, the reduction going on at an accelerating rate as higher temperatures are reached. Both bars received slight permanent sets under stress at their maximum temperatures.

It is uncertain whether the modulus of elasticity was materially affected thereby. Overstraining at atmospheric temperature is known to cause temporary reduction, and these bars apparently had moduli somewhat lower at the close than at the commencement of the tests. Other tests failed to show any change of this kind resulting from overstraining at higher temperatures when examined after periods of rest ranging from sixteen hours to about as many days.

The Tensile Strength. — The tensile strength was determined with specimens, 0.798 inch in diameter by 5 inches length of stem. They were confined within a sheet iron muffle, and were heated by means of a row of gas burners arranged within the muffle below the specimen. By varying the number of burners in use, the pressure or the gas and also by the use of different diaphragms for diffusing the heat, it was possible to maintain a practically uniform temperature at any desired point. Different methods of determining the temperature of the tests were considered. It was, however, decided to employ the specimen itself as the thermometer and measure its expansion above atmospheric temperature. From the observed expansion was computed the temperature, using the coefficients previously determined, and assuming that the rate of expansion continued uniform under the higher temperatures, this method has many advantages and seems to be reliable for temperatures up to those where the metal becomes plastic and devoid of elastic limit, and also excepting those states of the metal which were encountered in the coefficient of expansion determinations of tempered bars. The expansion was measured on a specimen length of 6 inches, defined in the usual manner by drilled and countersunk holes. Access to the specimen was had through holes in the top of the muffle, which admitted the conical points of the micrometer. It is not thought that the instrumental error in measuring the length of the hot specimen exceeded 0.0002 inch, which corresponds to a variation in temperature of 5.4°, according to the lowest coefficient of expansion used. The duration of a test ranged from five to ten minutes, the longer time being employed with strong or with ductile specimens ruptured at ordinary temperatures. The temperature of the bar was kept constant for a period of time preceding the test equal to that employed in making the test.

The results show that the tensile strength diminishes as the temperature increases from zero F. until a minimum is reached between 200° and 300°, the mild steels appearing to reach the place of minimum strength earlier than the higher carbon bars. From the temperature of this first minimum strength the bars displayed greater tenacity with an increase of temperature until the maximum is reached between the temperatures 400° to 650° F. The hard steels reach the temperature of maximum strength somewhat earlier than the mild steel and retain the highest strength over a more limited range of temperature than the latter.



From the place of maximum strength the tenacity diminishes with increase of temperature, rapidly with the hard steel, somewhat less so with the mild steel, until the highest temperatures are reached covered by these experiments.

Diagram 1 shows the curves of tensile strength of several grades of steel and of cast iron. Diagram 2 of certain wrought irons.

The cast iron appears to maintain its strength with a tendency to increase until 900° are reached, beyond which temperature the strength gradually diminishes. Under the highest temperatures numerous cracks on the cylindrical surface of the specimen were developed prior to rupture. It is remarkable that cast iron, so much inferior in strength to the steels at atmospheric temperature, under the highest temperatures has nearly the same strength the high temper steels then have.

The converging lines of the diagram show that steels differing nearly 90,000 pounds per square inch, when cold, at the higher temperatures have approachd each other and differ in tensile strength less than 10,000 pounds per square inch. If increased carbon content lowers the melting point the curves of strength might be

expected to intersect at some high temperature. As we approach the melting point there is, however, difficulty in distinguishing between the resistance against rupture due to overcoming the forces of cohesion and what we take to be intermolecular friction, and this kind of action prevents definitiveness of results at certain temperatures.

The so called "critical temperature" or blue heat where metal commonly displays brittleness under bending tests comes in at a time when the metal under direct tensile stress is in the vicinity of its maximum value.

A wrought iron called iron A was selected for test because it had been found very hot-short at a welding temperature, and furthermore because it had been strained by tension with 42,320 pounds per square inch seven years previous to being cut into specimens for the hot tests. Here consequently was an opportunity for observing the effect of higher temperatures upon a metal in a high state of initial resistance due to overstraining, and one which at the same time lacked ductility at high temperatures. The results showed high tensile strength throughout the range of temperatures, and not until reaching 1568° F. did its hot-short, crumbling nature appear. The strength at the temperature of the testing-room was 61,180 pounds per square inch, and rose to 70,000 pounds per square inch at 570°. The continuance of high strength over a wide range of temperature leads to the inference that the effect of cold straining may not be eliminated until a comparatively high temperature is reached. Inferences of this sort are intended to apply only to the special property under consideration, because the effects of heat do not seem to follow parallel lines in reference to the several physical properties.

Wrought iron B, an ordinary grade of refined iron, resembled the mild steel in its behavior, except that in neither this nor in iron A was there discovered any stage of diminished resistance or temperature of first minimum strength in the vicinity of 200° to 300°. Four specimens from a muck-bar railway axle gave results in harmony with the other irons, displaying strength intermediate between irons A and B.

Numerically speaking, the greatest loss observed in passing from 70° to the temperature of first minimum strength occurred with steel 9A, which was 6.5 per cent. at 295°. The greatest gain over the strength at 70° was 25.8 per cent. shown by steel 1A at 460°, although in total gain in pounds per square inch, this, it was exceeded, by steel 6A at 587° where the gain was 15,120 pounds per square inch 12.8 per cent. In passing from the temperature 214° to 587° steel 6A gained 21,200 pounds per square inch.

Wrought iron B, which fractured when cold under 47,140 pounds per square inch, reached 58,520 pounds per square inch at 592°. The muck-bar axle showed 64,600 pounds per square inch, t. s., at 379°.

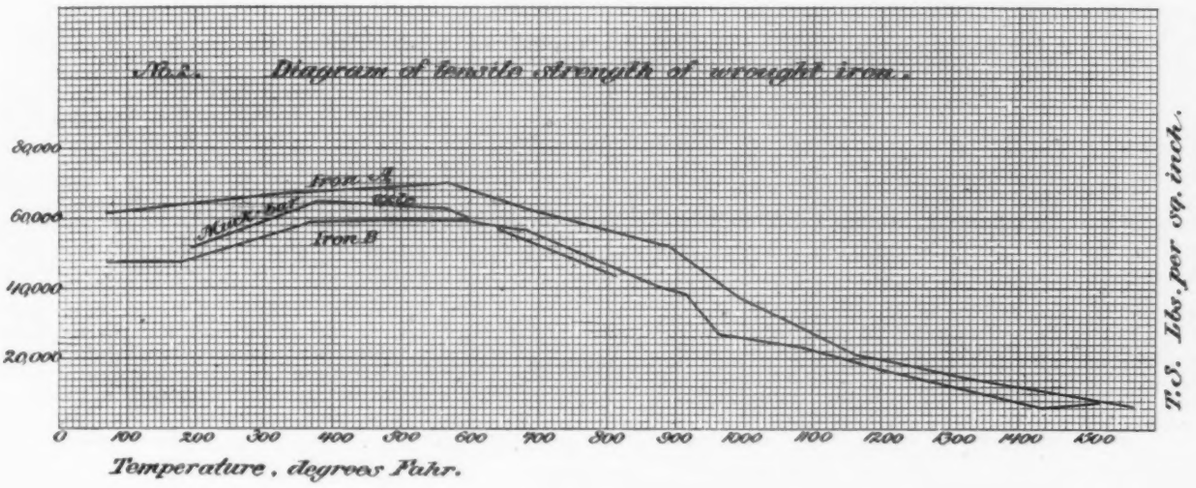
At temperatures from about 650° to 850° the bars have passed the stage of maximum tenacity and have returned to the strength at atmospheric temperature. At 1000° the strength ranged from say 50 to 70 per cent. of the strength at 70°, with a continual decrease above this point.

The Stress on the Ruptured Section.—The stress on the ruptured section resembles somewhat the curve of tensile strength. The speed of testing affects this value more or less, and failure of the specimen in detail may render it difficult to identify the load at which contraction ceases and rupture begins. At atmospheric temperature the stress on the ruptured section in pounds per square inch exceeded the tensile strength over 100 per cent. in the case of mild steel, this excess diminishing with the harder metal to about 11 per cent. Whence it follows that variations in strength are less conspicuous between the several grades of steel here represented when compared with the stress on the ruptured section, than when the comparical examination of the elastic limits at different temperatures, using a modified form of specimen not admissible in this general series of tests.

The Contraction of Area.—The contraction of area at the place of rupture varies with the temperature of the metal. The contraction of mild and medium hard steel is somewhat less at 400° to 600° than at atmospheric temperature, and within this zone there is a tendency to fracture in an oblique direction across the bar. The hard steels showed substantially the same contraction up to 500°. Above 500° or 600° the contraction increases with increase of temperature, excepting bars 8A, 9A and 10A, which formed a special group and displayed a stage of diminished contraction at 1100° to 1200° until at the highest temperatures some of the specimens drew down almost to points before rupture was complete. The diminished contraction at 400° to 600°, coupled with the tendency to fracture in an oblique shearing direction, are significant features, inasmuch as they harmonize with the brittleness frequently observed in bending tests at these temperatures previously alluded to.

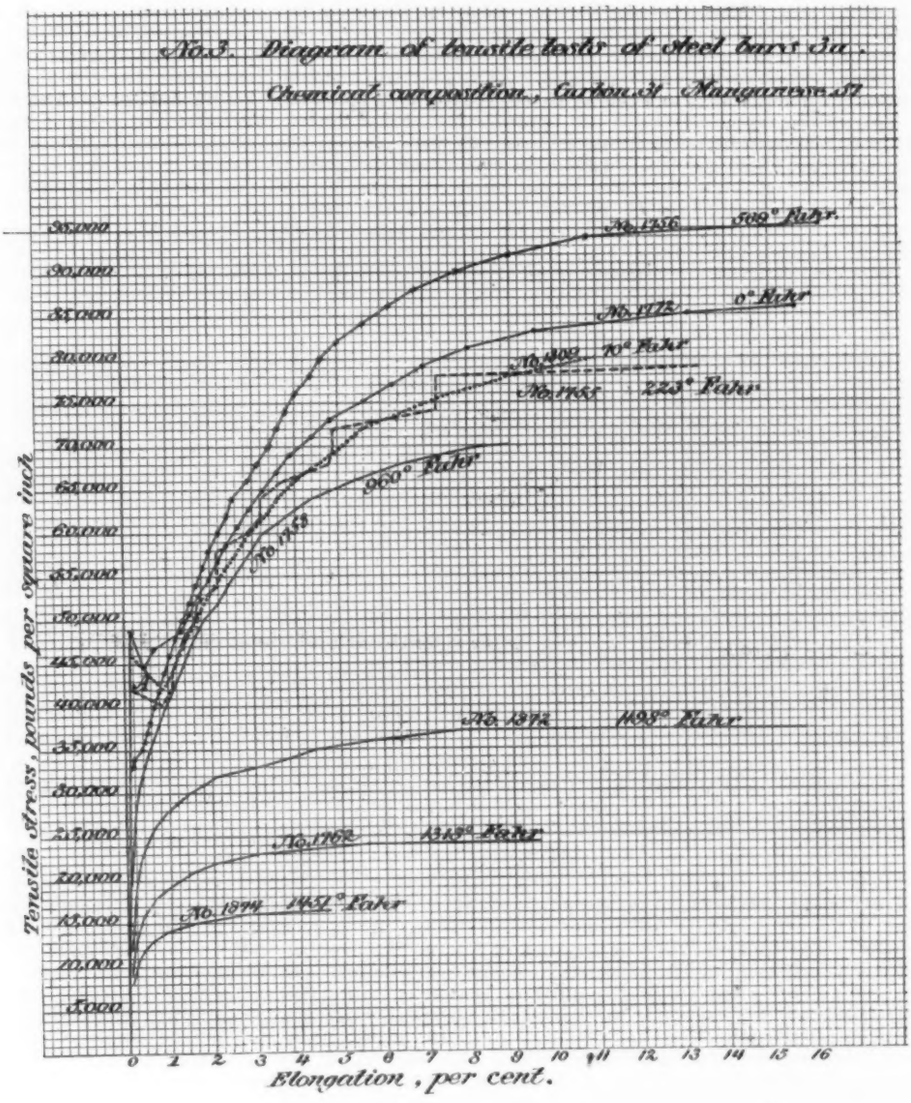
Specimens of large contraction, tested at high temperatures, have given evidence on the fractured ends of having ruptured in detail, commencing at the center of the bar, the surface metal separating last. A test was discontinued when the contraction had reached 94.4 per cent., the temperature at the time being 1451°, and upon filing away a portion of the outside metal a cavity was disclosed at the center of the bar at the place of minimum sectional area. When large contraction of area occurs local contraction generally extends over a considerable length of specimen. As examples of large contraction, it will be mentioned that a specimen of steel, 4A, which was fractured at the temperature 1572° contracted 98.9 per cent. Steel 10A, which contained .97 per cent. C. and was brittle in the fracture when the cold contracted 57.6 per cent. at 1638°, and other hard steels showed large contractions at correspondingly high temperatures.

Elongation Under Stress and After Rupture.—The approximate elongation under stress was determined from measurements taken between the pulling heads of the testing machine at a convenient distance from the specimen. It appears that total elongation, that which is measured after the rupture of the metal, is greatest at ordinary temperatures, although at high temperatures the metal is ductile and may be worked under the hammer, it does not then possess within itself sufficient strength to develop great elongation, considering now the general elongation of the metal beyond the influence of local contraction incident to drawing down at the place of



rupture. In carrying out the experiments the elongation was noted at the time of reaching the maximum stress, and this elongation approximately represents the general stretch of the metal. But in these observations there existed, at times, great uncertainty, because the metal as it contracts locally increases in resistance in stress per square inch. An accelerating rate of flow takes place locally when general elongation ceases. The intermolecular friction under rapid flow increases the apparent resistance. The grooved form assumed by the specimen is favorable for increased resistance per unit of area. These several features contribute toward concealing the time when general elongation ceases and local contraction sets in.

The interval between the elastic limit and the maximum stress has features of great interest. Several of the different grades of steel show a yielding point at the elastic limit, this period being marked by rapid stretching without increase of stress, and frequently the stretching once begun will continue under reduced loads. It rarely happens that yielding of this kind occurs more than once when the test is made at atmospheric temperature. In mild steel this phenomenon has been observed up to the vicinity of 500°. In hard steel, if present, it occurs at less elevated temperatures. Bars tested at temperatures between 200° and 400° exhibited alternate periods of relaxation and rigidity under increasing stresses, resembling a succession of yielding points, thus giving a zig-zag appearance to the curve representing the tensile test. Test bar No. 1755, diagram 3, furnishes an illustration of this kind. Observations on the contractile force developed during cooling from high temperature showed the same kind of behavior then took place. These intervals of relaxation and rigidity occurring under both rising and falling temperature are suggestive of some remarkable change taking place within the metal in this zone of temperature, phenomena conspicuous in a series of tests possessing many remarkable features. After passing this critical stage of seemingly unstable condition the metal, under higher temperatures, gradually stretches under advancing loads, accelerating in speed as the tensile strength is approached.


No. 3. Diagram of tensile tests of steel bars 3/4 in.
Chemical composition, Carbon .3 Manganese .52
No. 1756 569° Fahr.
No. 1772 0° Fahr.
No. 1769 70° Fahr.
No. 1765 223° Fahr.
No. 1763 660° Fahr.
No. 1773 1193° Fahr.
No. 1762 1315° Fahr.
No. 1774 1451° Fahr.
Tensile stress, pounds per square inch.
Elongation, per cent.

This further peculiarity is noticed concerning the stretch of the metal under stress, that greater rigidity exists under certain stresses at intermediate temperatures than at either higher or lower temperatures. Specimen No. 1756, tested at 569°, illustrates the kind of behavior now referred to. In this specimen there was less stretch of the metal caused by loads above 50,000 pounds per square inch than was displayed by other bars tested above or below this in temperature.

An inspection of diagram No. 3 will show a triangular area marked with the letter A where certain bars at comparatively low temperatures displayed rigidity under stresses immediately following the elastic limit, rigidity through this range of stresses being peculiar to atmospheric temperatures and those somewhat above it.

The Rate of Speed of Testing.—The rate of speed of testing which may modify the results somewhat with ductile material at atmospheric temperature, has a very decided influence upon the apparent tenacity at high temperatures. Steel No. 8A was tested at the adopted speed of the series and also under rapidly-applied stresses. The time employed to reach the maximum stress under the latter condition of test was from two to eight seconds. Nearly the same strength was displayed whether slowly or rapidly fractured at temperatures below 600°, this being a comparatively brittle metal at moderate temperatures. Above this temperature the apparent strength of the rapidly fractured specimens largely exceeded the strength of the others. The higher the temperature the wider apart in general were the results. An extreme illustration of this kind was furnished by a specimen tested at 1410° which when ruptured in two seconds of time showed a tensile strength of 63,000 pounds per square inch as nearly as could be weighed, whereas at the ordinary speed of testing a corresponding bar fractured at 33,240 pounds per square inch.

On the other hand, prolonged stress appears capable of rupturing the metal under lower loads than ordinarily required, although the differences are less conspicuous than in the case of rapid testing. If, however, the stresses could be prolonged for days instead of hours, maintaining in the meantime a constant temperature, perhaps equally remarkable results might be reached in this way. Without entering, at this time, into a discussion of the probable explanation of this behavior, it will be remarked that the forces of cohesion tending to prevent rupture in a plane nor-

mal or oblique to the direction of the straining force and intermolecular friction developed during the flow of the metal are prominent or controlling elements. One or the other exerts a predominant influence according to attendant circumstances.

The Rate of Flow Under Stress.—Closely allied to the phenomena under consideration is the subject of the rate of flow under stress. Strains within the elastic limit appear to respond at once to the applied stresses. Thus no difference in the deflection of a transversely loaded rotating shaft was detected under the highest speed employed, when the stresses changed from tension to compression in one-forty-fifth second, the shaft being run at atmospheric temperature. The deflections were measured under different speeds of rotation up to 1350 turns per minute and under different loads, the highest fiber stress reaching 50,000 pounds per square inch. Common experience teaches that the full effect of a load superior to the elastic limit is not immediately felt, and this appears to be true at higher temperatures.

A direct comparison of the relative rates of flow of the metal at different temperatures is difficult to undertake on account of the constantly changing values of the elastic limit and tensile strength. The impression, however, has been received that a more sluggish rate of flow of longer duration may take place at high than at low temperatures. A specimen of steel 10A was observed for a period of three hours, during which time the metal continued to elongate at a nearly uniform rate of speed, stretching about 0.0008 of its length each five minutes. The stress was 20,000 pounds per square inch and the initial and final temperatures 1170° and 1189° respectively. Another example, furnished by the same grade of steel, showed a mean rate of flow of 0.0015 per unit of length per five minutes of time, with a slightly accelerating tendency. These last observations were limited to one hour, the stress on the bar being 5000 pounds per square inch, and the initial and final temperatures 1505° and 1494° respectively. The apparent tensile strength of this steel, as shown by diagram 1, is 70,000 pounds per square inch at 1180° temperature, and 29,000 pounds per square inch at 1500°, hence the continuous yielding observed in these two instances, occurred under stresses of 28.6 per cent. and 17.2 per cent. of the tensile strength at corresponding temperatures. There was no corresponding test made with steel 10A at atmospheric temperature, but similar observations have been made with ductile metal at 70° F. A specimen of steel boiler plate was loaded with 41,000 pounds per square inch, or 70.4 per cent. of its tensile strength, and within ten minutes of time the stretching had almost ceased; during the last minute the elongation was 0.00001 of its length. The elastic limit of the boiler plate was 28,850 pounds per square inch.

Under high temperature, generally speaking, the flow caused by a stress slightly in excess of the elastic limit, has a retarding rate of speed and eventually appears to cease, whereas under the influence of a high stress the rate of flow may accelerate and end in the rupture of the metal. So long as the metal continues to stretch at a practically uniform rate of speed, however slowly that may be, we are left in doubt whether rupture would not ensue under the stress then acting if sufficient time were allowed.

The Specific Gravity.—The specific gravity of specimens from the original hot-rolled bars, first series of steels, gave the following mean values:

Steel marked.	Specific gravity.	Steel marked.	Specific gravity.
1A.....	7.8705	6A.....	7.8398
2A.....	7.8609	8A.....	7.8248
4A.....	7.8433	10A.....	7.8155

Hence it appears that a diminution in the quantity of iron present in the steel is accompanied by a corresponding loss in density, excepting steel marked 8A, which according to table 1 has more iron than steel 6A. If we make the observation that the specific gravities diminish as the carbon increases no exception to the rule appears among these bars. These open-hearth steel bars were treated alike in their manufacture, hence the variations in density are primarily due to differences in chemical composition.

Subsequent determinations were made upon the truncated ends of the fractured tensile specimens. The results showed a decided diminution in density in the vicinity of the fractures, which in the case of steel 1A amounted to 0.20 per cent., the fracture being made at 70° F. Of the other grades some showed greater and others less diminution in density than No. 1A, when fractured at atmospheric temperature, very slight differences occurring in some of the hardest grades. This diminution in density at the place of rupture pertains to the metal when tested at different temperatures, and both when the rupture was completed hot and when it was overstrained hot and subsequently ruptured cold. High temperature at the time of test and great contraction of area did not sensibly vary the diminution in average density.

Overstraining Hot and Subsequent Rupture Cold.—The effect of straining hot on the subsequent strength when tested cold appears to depend upon the magnitude of the straining force and the temperature when overstrained. There is a zone of temperature in which the effect of hot straining elevates the elastic limit above the applied stress and above the primitive value, and if the straining force approaches the present tensile strength there results a material elevation of that value when cooled. After exposure to higher temperatures a gradual loss occurs in both elastic limits and tensile strength, and generally there follows a noticeable increase in the contraction of area. In so extended a field of research and at this state of the investigation, queries naturally suggest themselves faster than they can be solved. We would like to know the effect of manipulation, be it overstraining by tension, under the hammer or in the rolls, applied to the metal over the entire area bounded by the curves of tensile strength, noting the effect upon the strength when the metal has cooled and also the modification in strength when hot, at higher temperatures. From what has been accomplished it appears that a load which causes a slight permanent set, at temperatures from say 335° to 740° F., may not in the subsequent cold test cause a very striking difference in the results over the hot-rolled or annealed metal. If, however, the straining force nearly equals the tensile strength there may result an enormous elevation of both elastic limit and tensile strength when cold.

An illustration of great elevation of elastic limit and considerable elevation in tensile strength was furnished by a specimen of steel 10A. This grade of metal had an elastic limit of 82,000 pounds per square inch, and tensile strength of 154,000 pounds per square inch when tested at 70°. A hot specimen was strained with 140,000 pounds per square inch tension at 535°, the elastic limit at this temperature being 64,000 pounds per square inch, or 78 per cent. of that cold. After an interval of three days the specimen was ruptured cold, when there was found an elastic limit of 164,000 pounds per square inch, a little more than twice its original value. The tensile strength was less affected, yet it reached 167,000 pounds per square inch. These results all refer to the strength per square inch on the original area of the specimen.

Another example was furnished by a bar of steel 6A, which was strained with 130,600 pounds per square inch tension at the temperature of 540°. On this occasion the straining force was in excess of the tensile strength cold, the latter being 117,920 pounds per square inch at 70°. The specimen elongated 12 per cent., and at the minimum section contracted 11.8 per cent. Disregarding the contraction of area, the strength when cooled to 70°, a rest of 70 hours intervening, was 149,780 pounds per square inch, a gain of 31,860 pounds per square inch. Considering the bar as a new specimen at the close of the hot test, referring the breaking load to the minimum area at the commencement of the cold test, we find the tensile strength reached 169,820 pounds per square inch. The metal ruptured with little additional display of ductility. The total elongation after fracture was 12.4 per cent., the total contraction of area 12.8 per cent., this enormous gain in strength being accompanied by brittleness in the fracture.

In a similar manner overstraining specimens of wrought iron *b* caused an elevation in both elastic limit and tensile strength. The interval of time, however, between the tests which ranged from 40 to 120 hours may have contributed in part to the increased strength observed. In one instance only an hour rest intervened and then the difference in strength was small. Neither under the effects of the stresses nor the temperatures employed did the iron become brittle in the fracture when finally ruptured.

Some extra refined and double refined irons which were ruptured at atmospheric temperature, and the fractured ends retested after the lapse of many months were found granular in the fractures, although repeated rupture of the annealed metal gave fibrous fractures when the several tests immediately succeeded each other. On the other hand, irons have been examined after straining and an interval of rest equal to the above, which were fibrous, resembling the original fractures.

If the overstraining is done at temperatures say above 740° to 800°, then we have apparently passed the zone in which straining hot brings about the most remarkable changes in elastic limit and tensile strength when the metal has again cooled. Gradually temperatures are reached at which overstraining does not leave the metal in a higher state of tensile resistance than originally belonged to the specimen. Overstraining in the vicinity of 1100° left the bars with their tensile strength practically unchanged. Passing to higher temperatures there was found a loss instead of gain in both elastic limit and tensile strength. At temperatures from 1400° to 1700° the loss in these two properties is very marked.

The subject, however, becomes complicated in this zone of temperature by reason of the softening or annealing effect going on, in addition to the influence of overstraining. Two specimens of steel, grade 10A, were simply heated to 1,529 and 1,684° respectively and cooled without hot straining. There was a diminution in both elastic limit and tensile strength when tested cold, but the losses were smaller than those displayed by the bars which were overstrained when correspondingly heated. Upon this evidence, the differences in the losses would indicate the amounts attributable to the overstraining forces.

The Color of the Bars After Cooling.—The color of the bars after cooling was not sensibly changed by temperatures below 200°. After 300° the metal was light straw-colored, after 400° deep-straw, from 500° to 600° purple, bronze-

colored and blue, after 700° dark-blue and blue-black, after 800° some specimens still remained dark-blue. The final color after heating above 800° affords less satisfactory means of approximately judging of the temperature which had been reached, the color remaining blue-black or darker until a thick magnetic oxide is formed. the condition of the surface, however, may enable an approximate idea to be formed of the temperature to which the metal has been exposed. A smooth glazed surface was formed on specimens which had been heated at 1000° to 1200°, the oxide reaching a tangible thickness at about 1100°, a heavier scale of 0.001 to 0.002 inch being formed as higher temperatures are reached. The red oxide appears at about 1500°. The early oxide tints are immediately removed by the action of acids. The glazed surface acquired at 1000° to 1200° offers considerable resistance against acids and against corrosion in a damp atmosphere. When the oxide reaches a tangible thickness it is more or less loosened from the surface of a ductile specimen when tested cold. Some exceptional specimens have had the surface color, which was acquired at 600° to 700° slightly broken under tensile stresses, but such instances are not often met at these temperatures.

The fractures of specimens, with straw colored cylindrical surfaces, were not colored. Those with blue surfaces had fractured ends, deep straw and brown. The fractures of dark blue and blue-black specimens agreed in color with the cylindrical surfaces. The specimens were allowed to cool immediately after rupture, hence the difference in colors of the exterior surfaces and the fractured ends is chiefly due to the different periods of exposure to the maximum temperatures.

We have been considering the effect of higher temperatures upon metal exposed to direct tensile stresses. Other tests have been made under more complex conditions. The experiments were made with riveted joints in steel plates. The types of joints represented were single-riveted butt joints with double welts, drilled holes, employing temperatures between 70° and 700° F. The indications of the plain tensile tests were here corroborated. Thus joints tested at 200° showed less strength than at 70°. Passing to higher temperatures, there was an increase in strength corresponding to that exhibited by the curve of tensile strength of mild steel. Furthermore joints which were overstrained hot at temperatures from 400° to 500°, with loads nearly approaching the limit of rupture, were found to have their tensile strength cold increased thereby. Other joints failed by shearing the rivets. Wrought-iron rivets which sheared cold at 40,000 to 41,000 pounds per square inch when at 300° reached 46,000 pounds per square inch, and at 600°, the highest temperature at which the joints failed in this manner, the shearing strength was 42,130 pounds per square inch. Although none of the joints failed by direct compression of the metal in front of the rivets, yet sufficiently high stresses were reached to demonstrate that the metal at these temperatures possesses high resistance in this and the various directions in which it may be strained in a riveted joint

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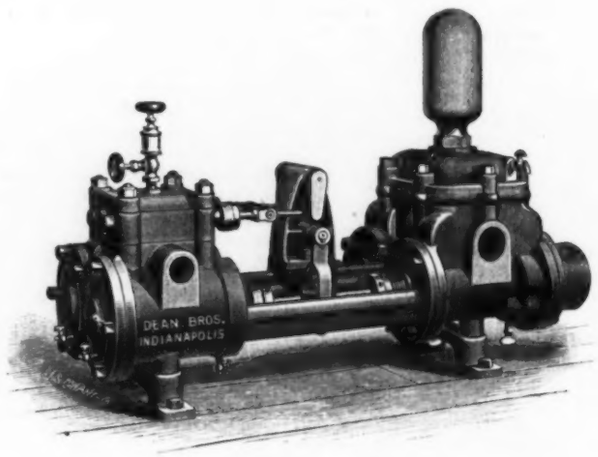
Philadelphia and New York capitalists have organized the Steel Tubular Car Company, which intend building a town near Bradford, McKean County, Pennsylvania, to exceed in importance, it is said, the town of Pullman, near Chicago. The company are interested in an invention that is expected to revolutionize the present construction of passenger cars, and have bought from 3000 to 5000 acres of land near Bradford, where the car works are to be established. The invention provides for a framework of steel tubing so arranged as to withstand the severest shocks or collisions or derailment.

Duplex Boiler Feeder.

The engraving shows a new pattern of small duplex boiler feeder brought out by Dean Brothers Steam Pump Works, Indianapolis, Ind., which in material, workmanship and design is intended to be unsurpassed. The one shown has 5-inch steam cylinder, 3¼-inch plunger and 5-inch stroke. The parts are all heavy. The levers and stuffing boxes are of brass. The plungers work through deep packing rings of hard bronze, and the whole is constructed to withstand the severe service usually imposed on a pump used for boiler feeding.

The Naval Appropriations.

The most interesting features in the Naval Appropriation bill reported in the House on Monday are those relating to new construction. 1. The bill provides for the construction of three sea-going, coast line-of-battle ships of about 8500 tons, designed to carry the heaviest armor and



DUPLEX BOILER FEEDER.

most powerful ordnance. This is not specified in the bill, but the intention is to have constructed ships carrying 17 inches of armor and correspondingly heavy guns. They are to carry coal enough to enable them to steam at the most economical rate of speed for 5000 miles without replenishing the supply, are to have the highest speed compatible with other good qualities, and are to cost, exclusive of armament, not to exceed $4,000,000 each. 2. The committee has provided for one armored cruiser of about 7300 tons displacement, not to exceed in cost $2,750,000, which is to have a minimum speed of 20 knots an hour. No provision is made for torpedo boats, but an appropriation of $30,000 is provided for testing the Ericsson submarine gun, with conditions upon which, in the event of its success, it may be acquired by the Government. For beginning the construction of the new vessels, continuing the work on those already authorized, and providing armament for them the bill contains an appropriation of $7,645,000, which is $465,000 more than was appropriated for like purposes last year.

A provision attached to the clauses relating to the new vessels requires one of the four to be built upon the Pacific Coast, and one upon the Gulf of Mexico or the waters tributary, if they can be built at a fair cost. General permission is also given to the Secretary of the Navy to build the vessels in navy yards if the work cannot be done at reasonable cost by private contract. Other items in the bill are as follows: For the armament of vessels, $2,500,000; for the plant of Washington ordnance shops, $145,000; for a proving ground for heavy ordnance on the Potomac River, $25,000; for the Portsmouth (N. H.) Navy Yard, $112,432 (including $50,000 to replace the shops destroyed by fire); for the Boston Navy Yard, $50,000; for the Brooklyn Navy Yard, $145,000; for the League Island Navy Yard, $145,000; for the Mare Island (Cal.) Navy Yard, $65,000; for the Washington Navy Yard, $15,000; for the naval station at Key West, $10,000.

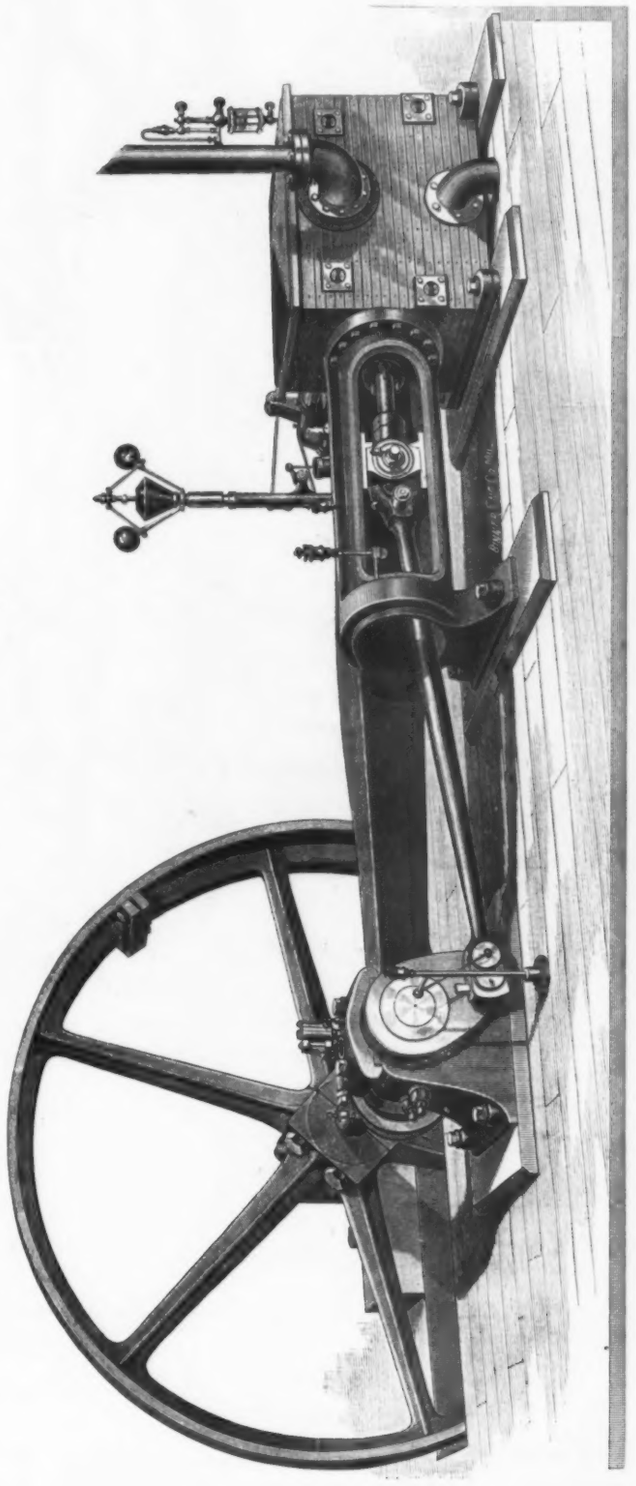
The palatial side-wheel steamer Plymouth, built at Roach's shipyards in Chester, Pa., for the Old Colony Steamboat Company, was successfully launched 3d inst. The hull frames and kelsons are constructed of steel, and her general appearance would indicate great speed. The Plymouth is 366 feet over all, 350 feet molded length, 50 feet beam, 85 feet over guard and 19 feet depth of hold. She will ply between New York and Fall River, and like the Puritan and Pilgrim, of the same fleet, is constructed on the double hull bracket plate and longitudinal system, giving her seven water-tight bulkheads and 50 water-tight compartments, thus securing as nearly as possible absolute safety. There will be no walking beam, the connecting-rods being connected with the piston-rods and crank-shaft. The vessel will have 5000 horse-power triple expansion engines, with four cylinders. The cabinet-work is exquisitely fine, all the saloons and staterooms being finished in expensive hard woods. There are 250 staterooms, with accommodations for 1200 passengers. The vessel, when completed and ready to take her place on the line, will, it is thought, be the most beautiful craft afloat and a perfect model of naval architecture.

Trials of the latest express compound locomotive in England with a special train of 18 carriages developed the unparalleled speed of about 90 miles an hour. The highest speed, as measured by a stop-watch, was just over ten seconds per quarter-mile run.

In the House a bill for a bridge across the Hudson River, between New York and New Jersey, was passed, and a favorable report was ordered on a bill appropriating $3,000,000 for a new patent office building.

The Nordberg Corliss Engine.

We illustrate herewith a new Corlis Engine, which possesses a number of valuable features distinguishing it from any other now built. It is designed by Bruno Nordberg, who is well known as a steam engineer of marked ability. It is calcutated to meet the increasing demand for greater strength and rigidity, and durability of wearing parts. The frame is of the girder pattern cast in one piece with the main-bearing and slide. It is box-shaped and hollow, the iron being distributed where needed to resist the strain brought upon the frame by the operation of the engine, and to secure perfect rigidity and alignment under all circumstances. The foot under the main bearing is considerably wider than the length of the bearing, and is provided for four foundation bolts. The slides are tied together at front end by a cast ring, which is an integral part of the frame. The lower side of the ring forms a foot which is bolted to the foundation. In designing the cylinder, which is patented, the object kept in view was to increase the inlet valve area and at the same time reduce the clearance.



THE NORDBERG CORLISS ENGINE.

Corliss engines of the larger sizes have been supplied with steam ports too small in proportion to their speed, partly because a large port area requires a valve of large diameter and partly because it increases the clearance. Both of these objections are obviated in this engine. The inlet valve area in all sizes of engines is proportionate to the speed—or, in other words, the velocity of the steam is the same in all sizes of engines. At the same time the diameter of the inlet valves is not more and is in some cases less than in the same sized engines of other manufacture. The clearance in the valve cavities is a great deal less than in those commonly made. That of the exhaust valve is reduced nearly one-half, this result being obtained by its location and peculiar construction.

The external valve gear presents a great many radical changes. It is operated by an eccentric on the engine shaft, communicating the motion through a carrier-arm and hook-rod to a main or wrist lever, from which the motion is transmitted to the four valves. In this respect it resembles the original Corliss valve gear. The main or wrist lever is, however, located in a different relative position to the valves, and is of such a proportion as to give a very quick movement at the point of opening of a valve, whether steam or exhaust, and this is accomplished with considerably less lap on the steam valves than is usually given them. The result of this movement is that less angular advance is needed on the eccentric than when the steam valves have to be set with more lap and the range of cut-off is increased. Another feature of the Nordberg Corliss valve motion is that the setting of the valves can be adjusted without changing the length of the valve rods—that is, without disturbing the motion by changing the angles through which the valves are intended to move. This advantage, we believe, will be appreciated by engineers familiar with Corliss engines. The bearings on all valve gear levers are much larger than on any existing engine. The exhaust arms are supported in the bonnets, thus relieving the valve stems from transverse strain.

The inlet valve and trip mechanism is of an entirely new type. The first motion or steam levers mounted on the bonnets and carrying the catches receive their motion from the wrist-lever. The catches engage with steel-faced projections on the dog-levers which are keyed on the valve stems and also connected to the vacuum dash-pots. The design is such as to bring all these parts in one line. All the working bearings about the steam-valve gear are made double and the hardened steel plates have twice the usual width. The catches are released by cams mounted on the bonnets, outside the rest of the valve motion where their lubrication is not affected by the heat; but little force is required to release the catches. The construction of this valve gear is such as to permit the addition of a full-stroke cut-off at slight additional expense. The end play on the inlet-valve stems is adjusted by set screws at the ends of the bonnets. The dash-pots are of an improved type, calculated to shut the valves as quick as possible. Their action is practically noiseless. They are pivoted on the exhaust bonnets and can never get out of line. The cross head is of a very compact pattern and is fitted with adjustable shoes lined with genuine babbitt metal, hammered in and turned to fit the slide. The area of the shoes is very large, being about one-half of the piston area. The cross head-pin is secured with a taper fit and can easily be removed. The connecting-rod is recently patented, being entirely new. Both ends are solid and provided with most secure and convenient devices for adjusting the boxes. The crank pin-boxes are brass lined with genuine babbitt metal; the cross head-pin boxes are made of hard phosphor bronze. All pins and piston-rods are of steel of the best quality.

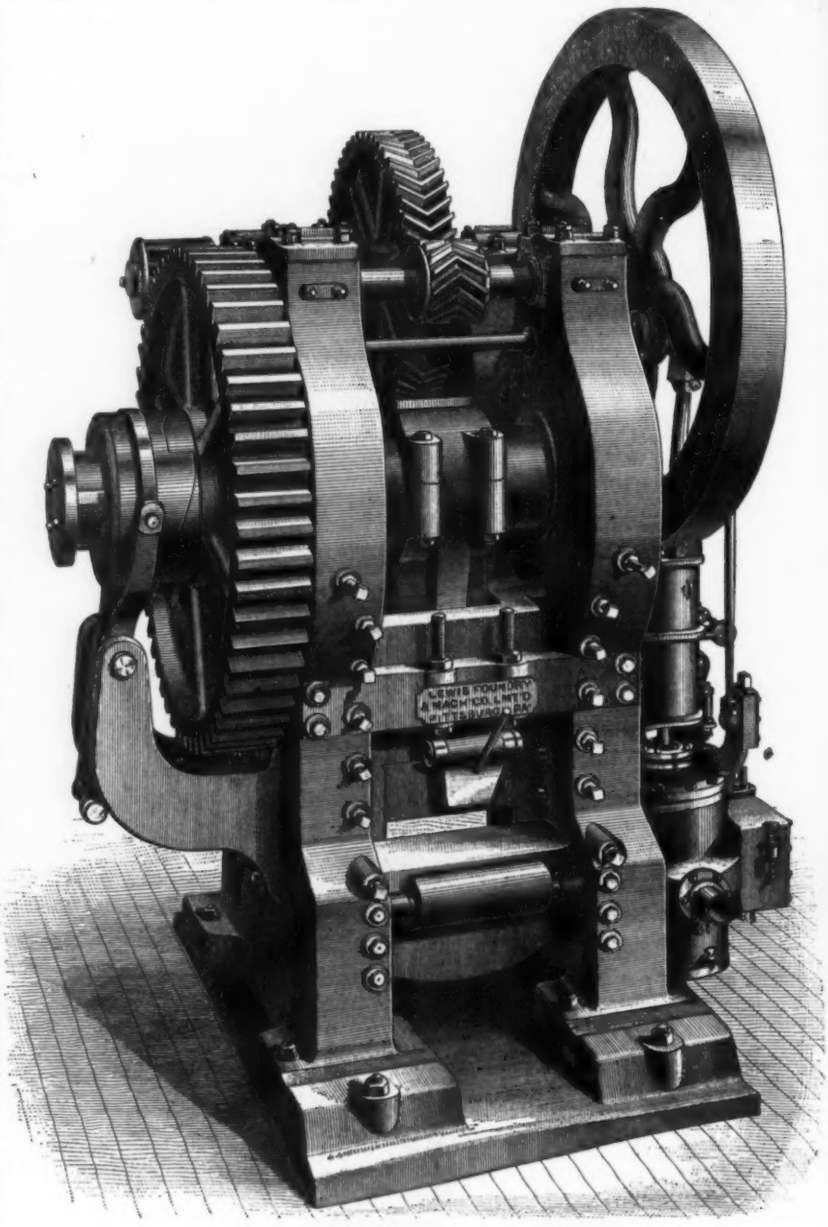
The Wilkin Mfg. Company, of Milwaukee, Wis., are the sole manufacturers of the Nordberg Corliss engines. They are prepared to furnish them of all sizes up to 2000 horse-power, single, compound and triple expansion, and with or without jet or surface condensers.

New Blooming Mill at Chester Rolling Mill.

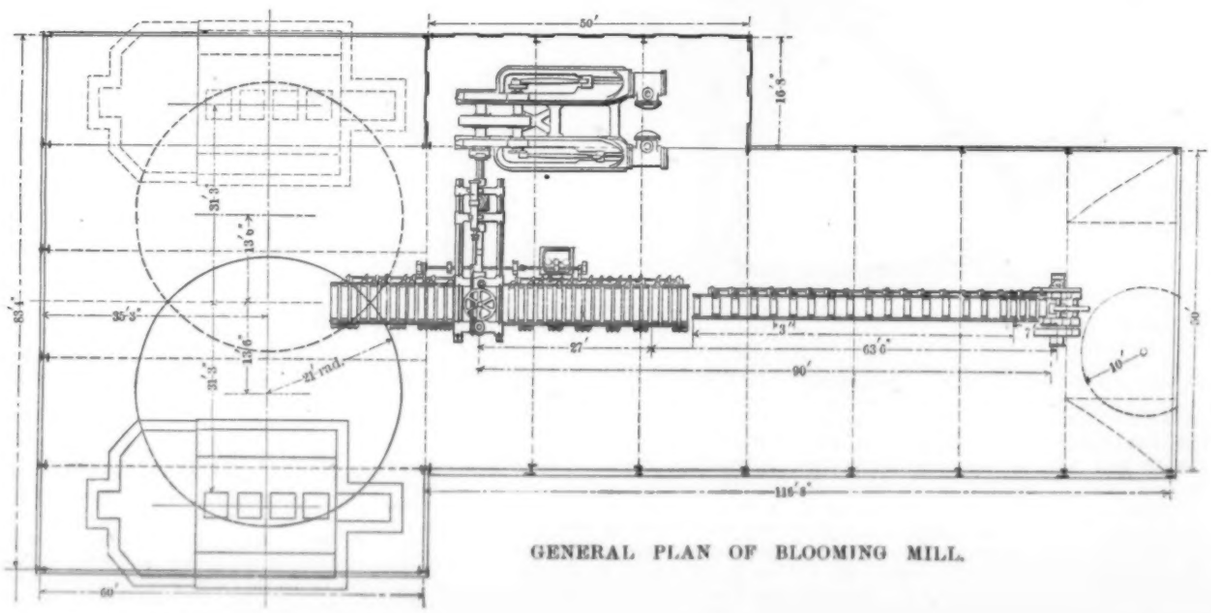
[*With Supplementary Sheet of Engravings.*]

At the Chester Rolling Mill, Chester, Pa., has recently been built a complete Bessemer steel plant from designs made by James P. Witherow, of Pittsburgh. Before describing the blooming mill portion of this plant, and of which we herewith present very complete drawings showing all the main features, we will briefly mention that portion which we have not illustrated. The plant embraces two 5-ton converters provided with all accessories, and embraces all the modifications and improvements that present practice dictates as being desirable. The converters are 7 feet 3 inches in diameter inside of shell, and are constructed in three sections—namely, a nose and bottom belt and a lower belt. The nose is made of ½-inch plate iron sheets, being butted together and held with lap straps on the inside. The middle and lower sections are of ⅝-inch plate iron. The total hight from parting of bottom to top of nose is 12 feet 3 inches. To the middle section of the converter are attached two cast-iron trunnions, the journals being 15 x 16 inches, and one being formed for the passage of air from the blast-pipe. The converter is supported upon a girder cord by a cast-iron pedestal. Upon one trunnion is mounted a spur-wheel 35¾ inches in diameter, 4-inch pitch and 10-inch face, into which engages the cast steel rack. Each converter is provided with one hydraulic cylinder for rotating, 16 inches in diameter and of sufficient stroke for operating the converter by means of a suitable rack. The bottoms, of which six were provided with each furnace, are of wrought iron with cast-iron wind-box, and are 7 feet 3 inches in diameter and provided for 12 tuyeres. Under each converter is a hydraulic ram 10 inches in diameter, 32 inches stroke, which is firmly riveted to the base-plate carrying the converter columns. Around each converter is a platform below the trunnion center, supported by channel bars resting upon columns carried from the general level. This platform affords ample means of access to all parts of the vessel

There are three cupolas with drop bottoms having shells 108 inches in diameter and intended to line to about 76 inches at crucible. The total hight of shell from the mantel-plate is 34 feet. Each cupola is provided with six tuyeres, one charging-door frame, one cinder notch, one tapping-hole, one drain-hole, and a large opening in the shell at the base fitted with plate-bars and wedges. The lift for cupola is a standard hydraulic freight hoist with cylinders 8 inches in diameter and the necessary stroke, and having a lifting ca-



BLOOM SHEAR.



GENERAL PLAN OF BLOOMING MILL.

New Blooming Mill at Chester Rolling Mill.

[*With Supplementary Sheet of Engravings.*]

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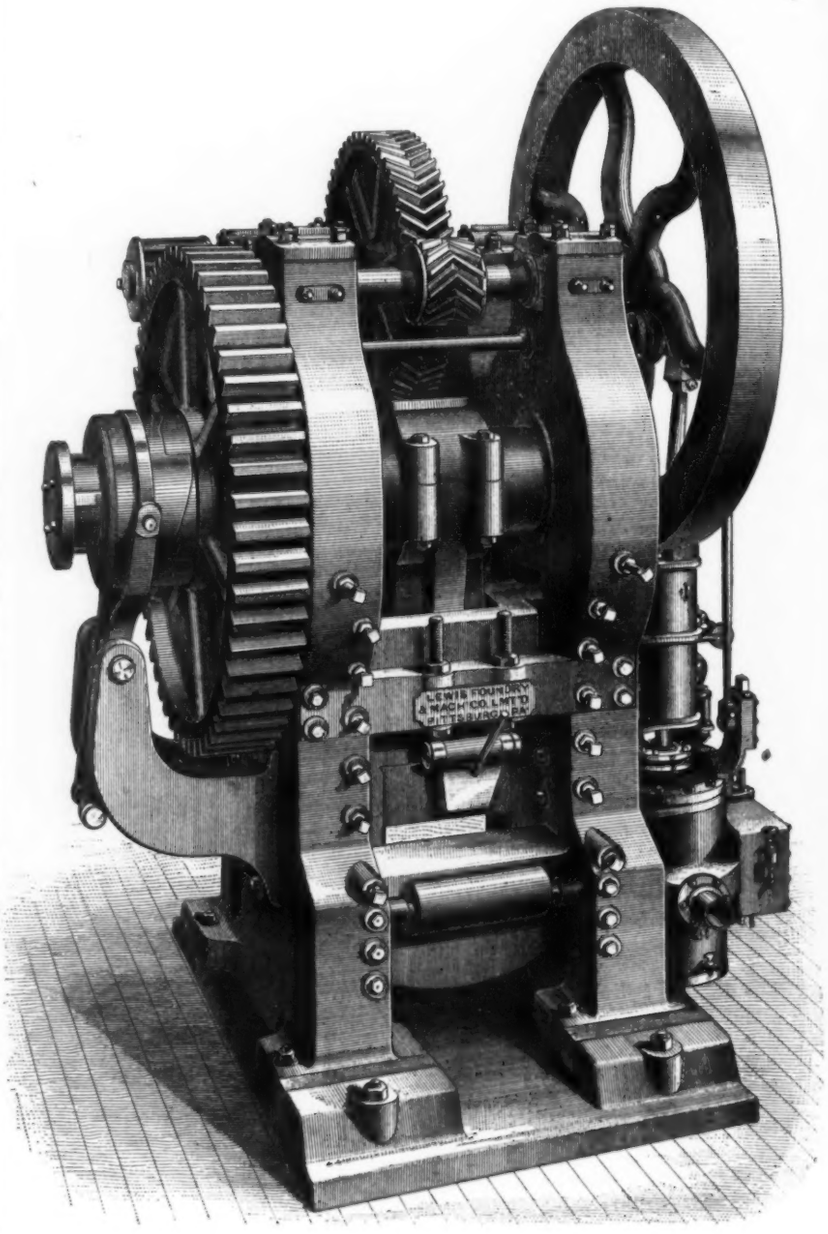
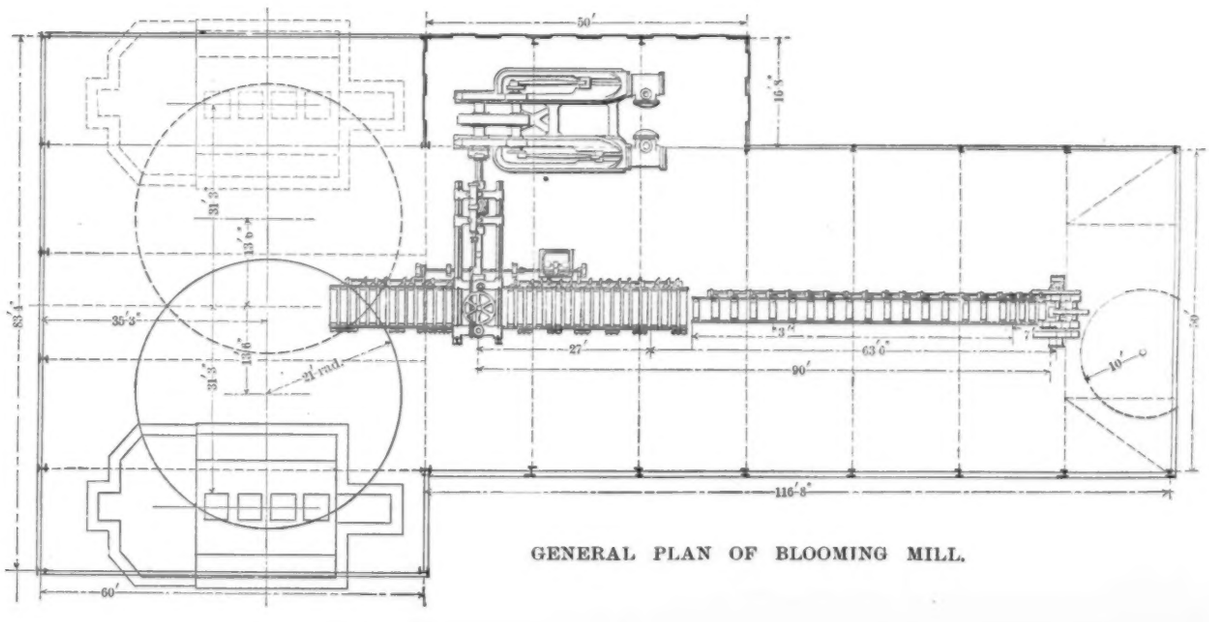
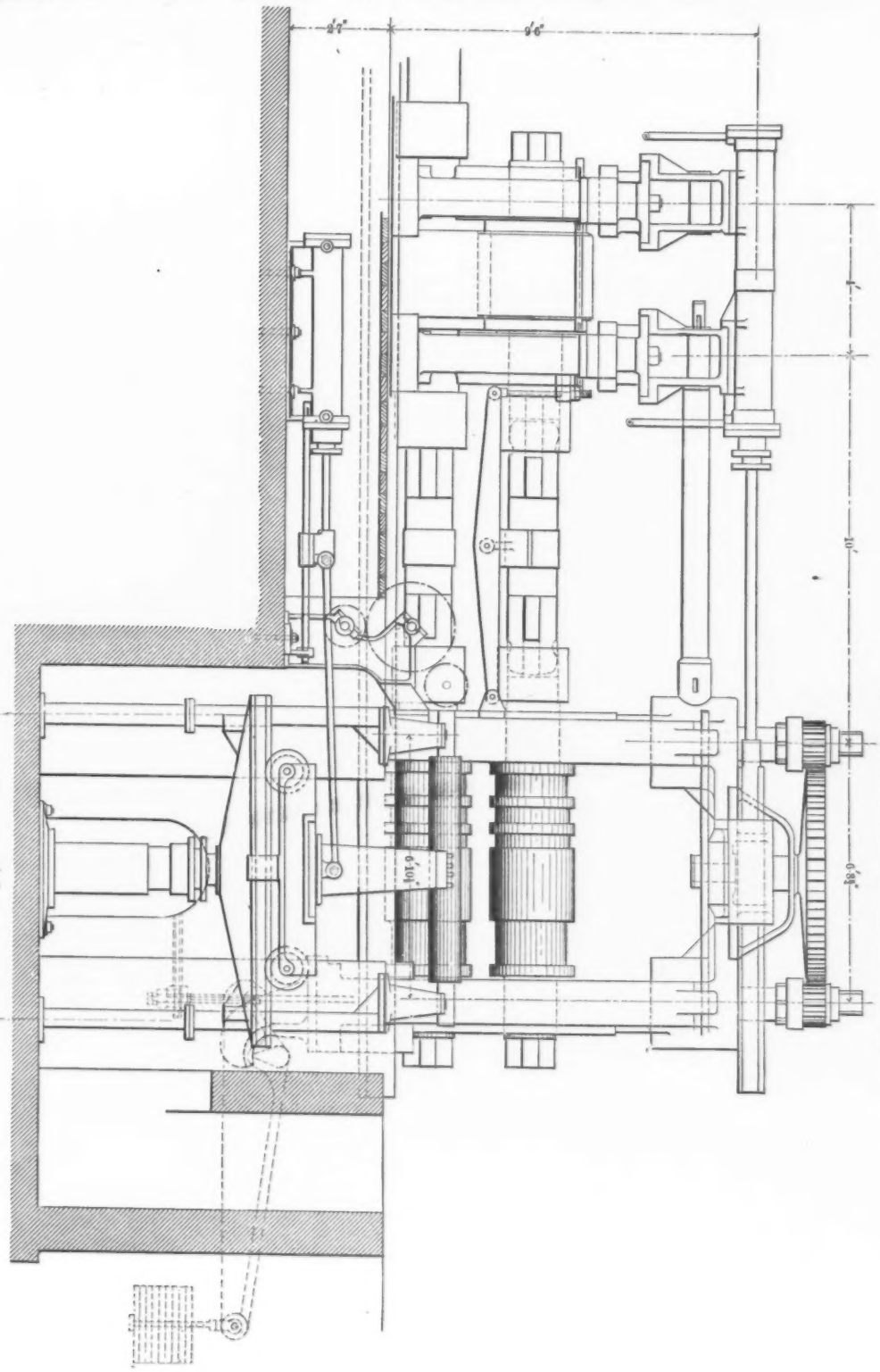


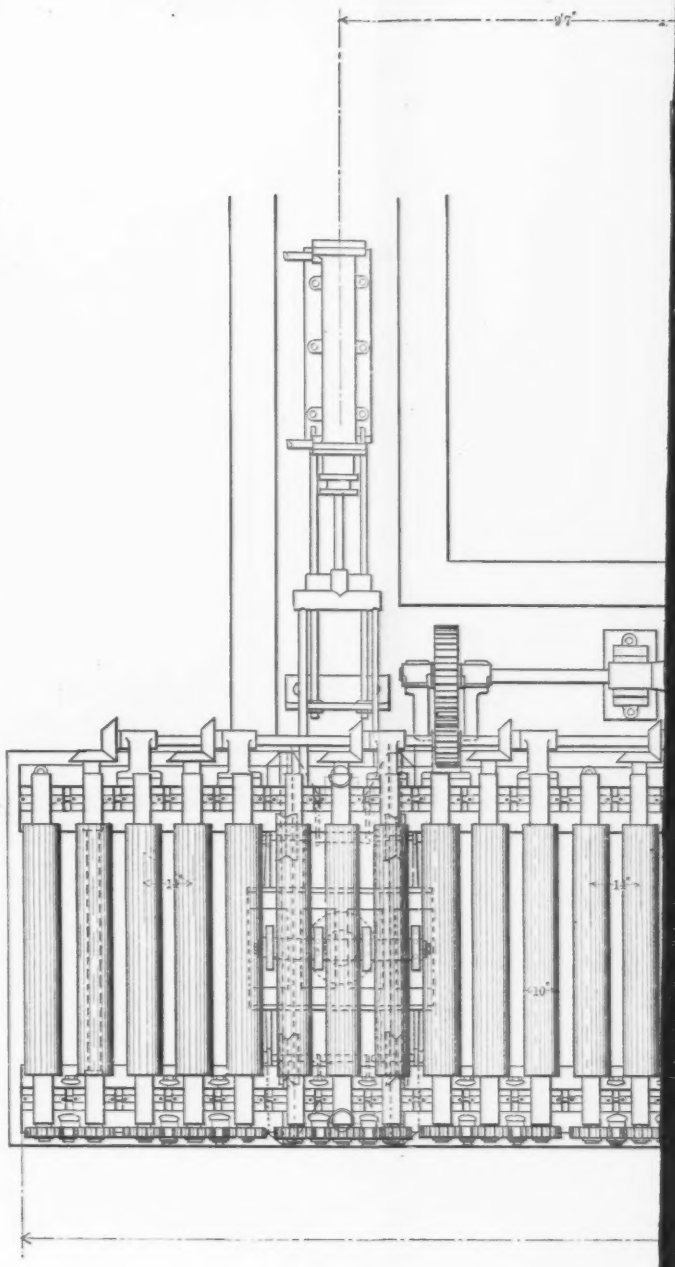
BLOOM SHEAR.

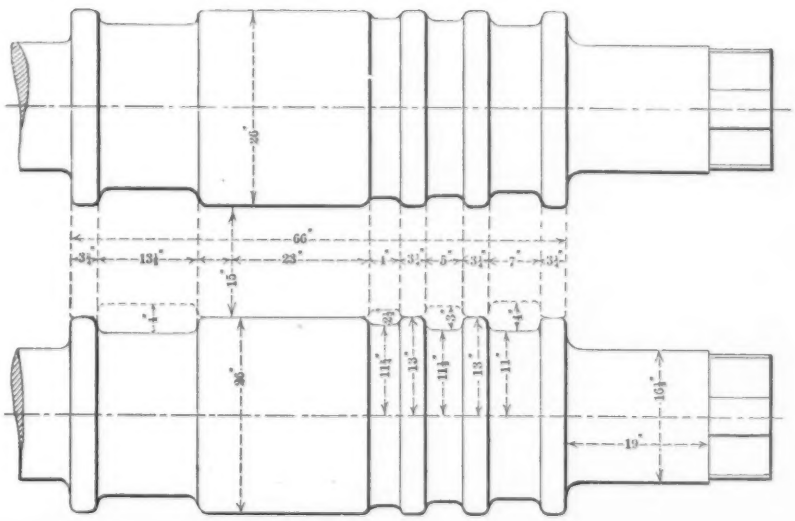


GENERAL PLAN OF BLOOMING MILL.

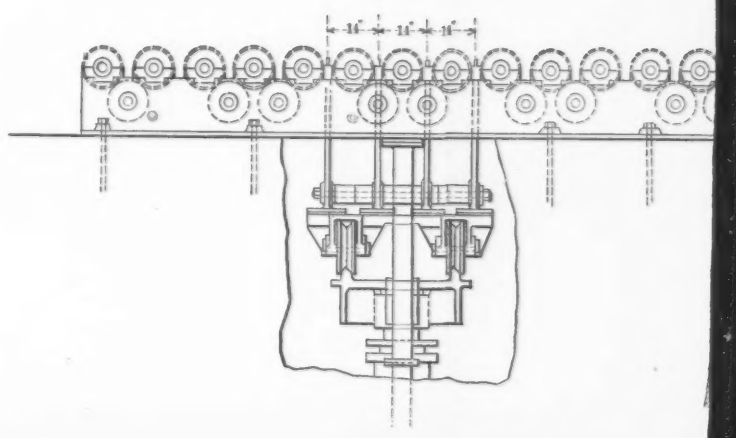


ELEVATION PARALLEL WITH ROLLS.

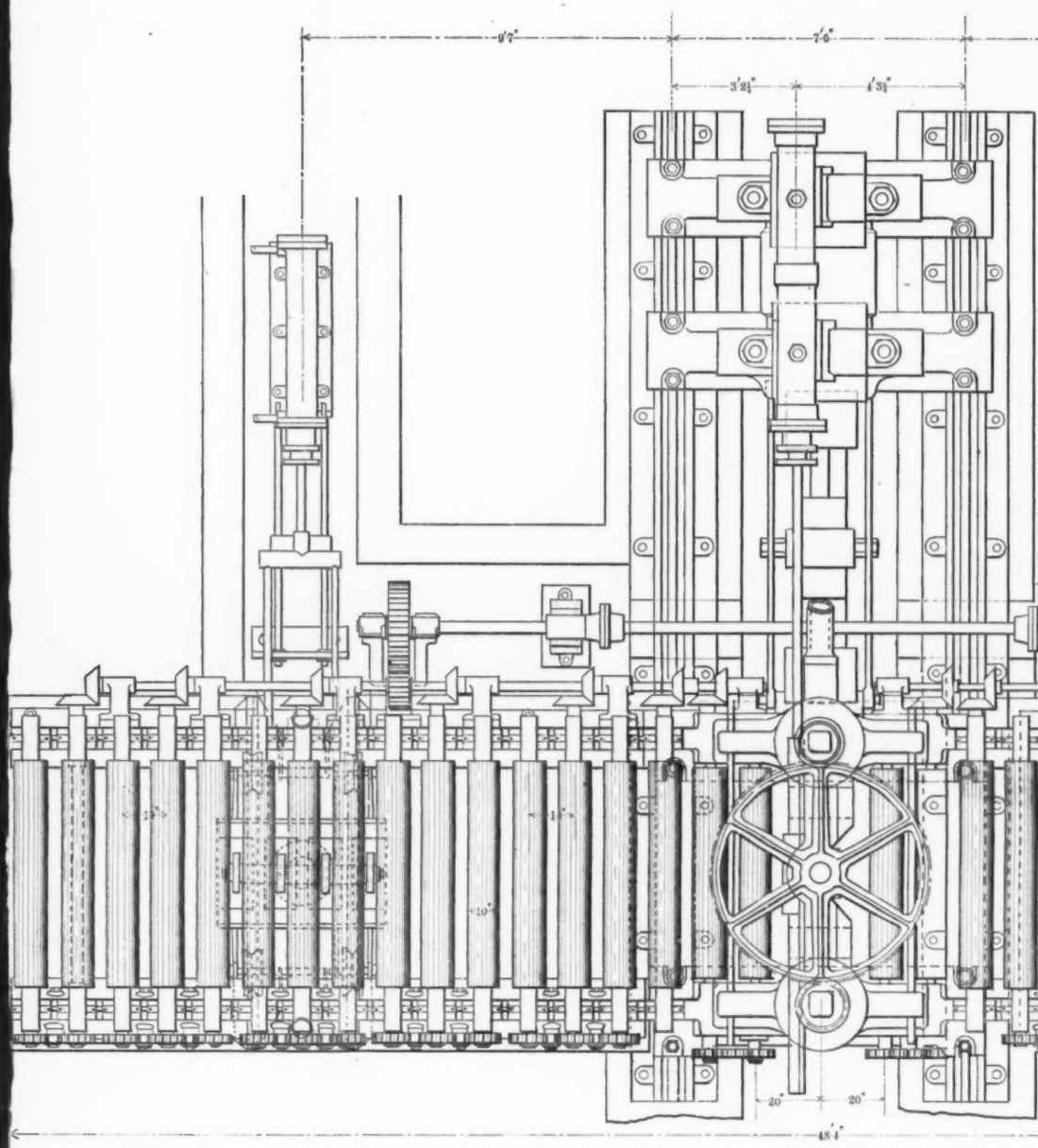




THE ROLLS.



THE BLOOMING MILL OF THE NEW BESSEMER STEEL PLANT OF



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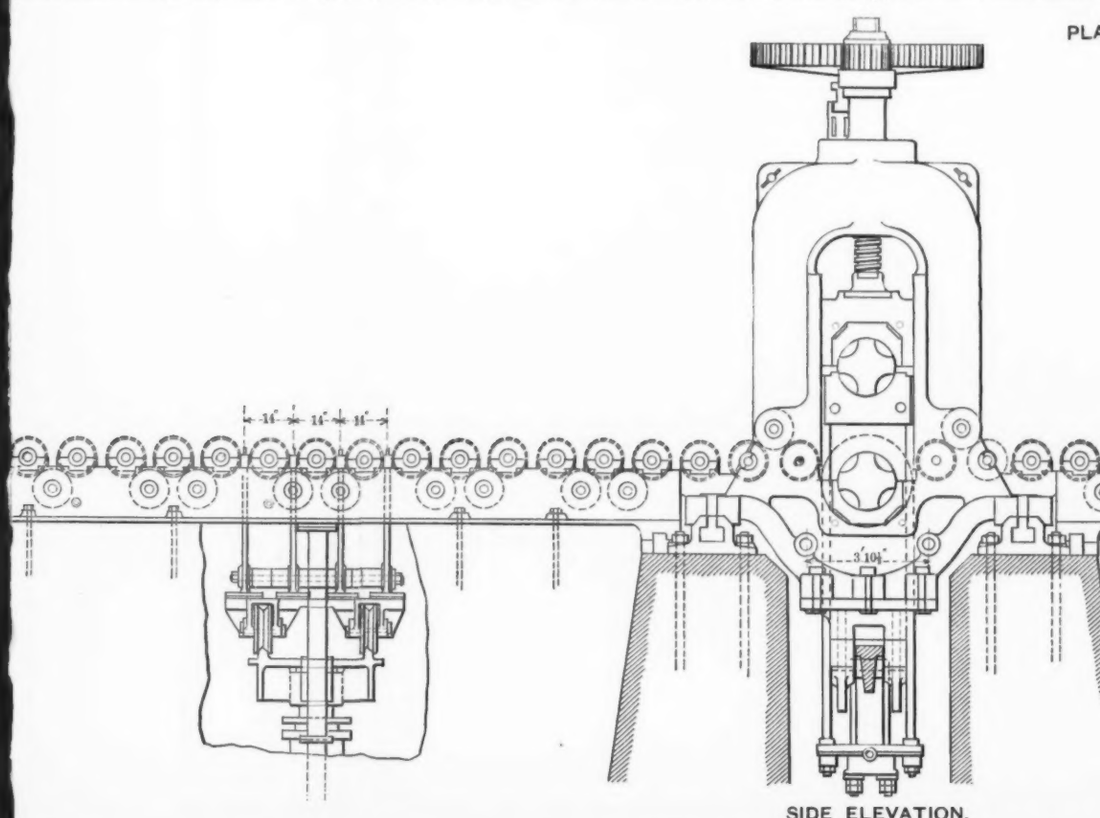
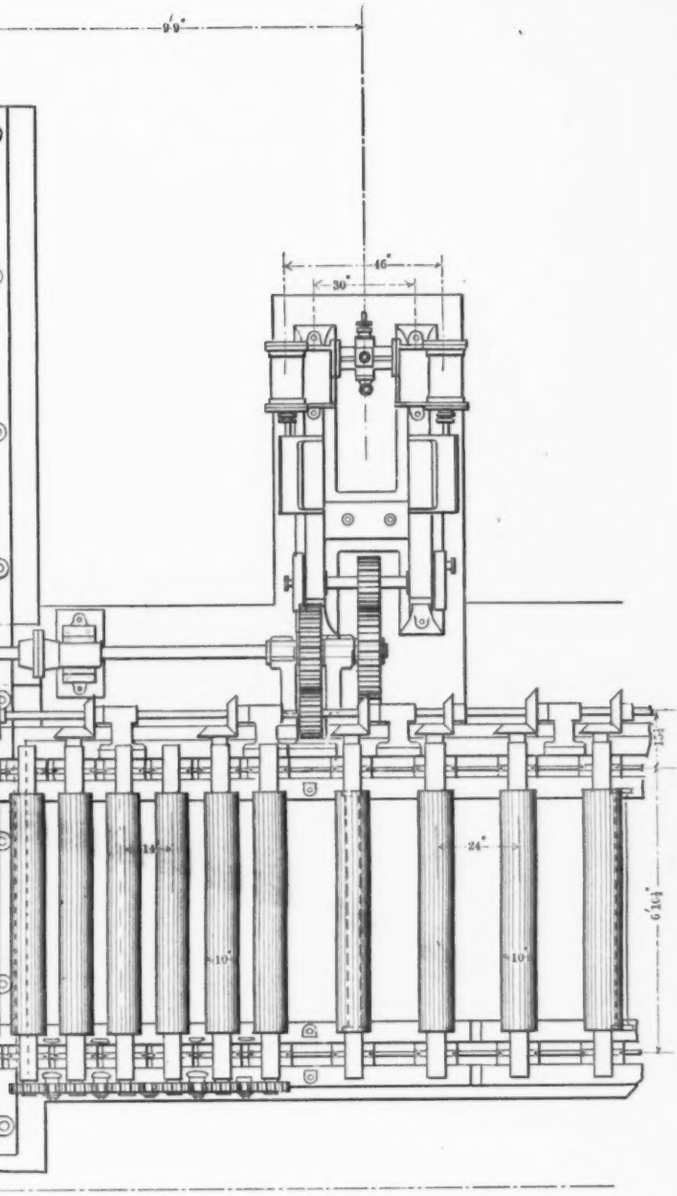
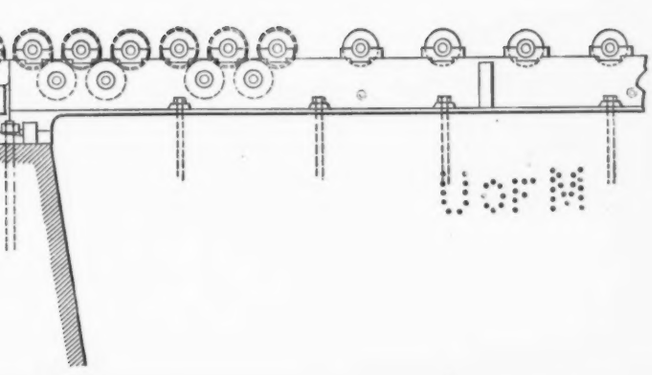


SIDE ELEVATION.

THE NEW BESSEMER STEEL PLANT OF THE CHESTER ROLLING MILL



PLAN.

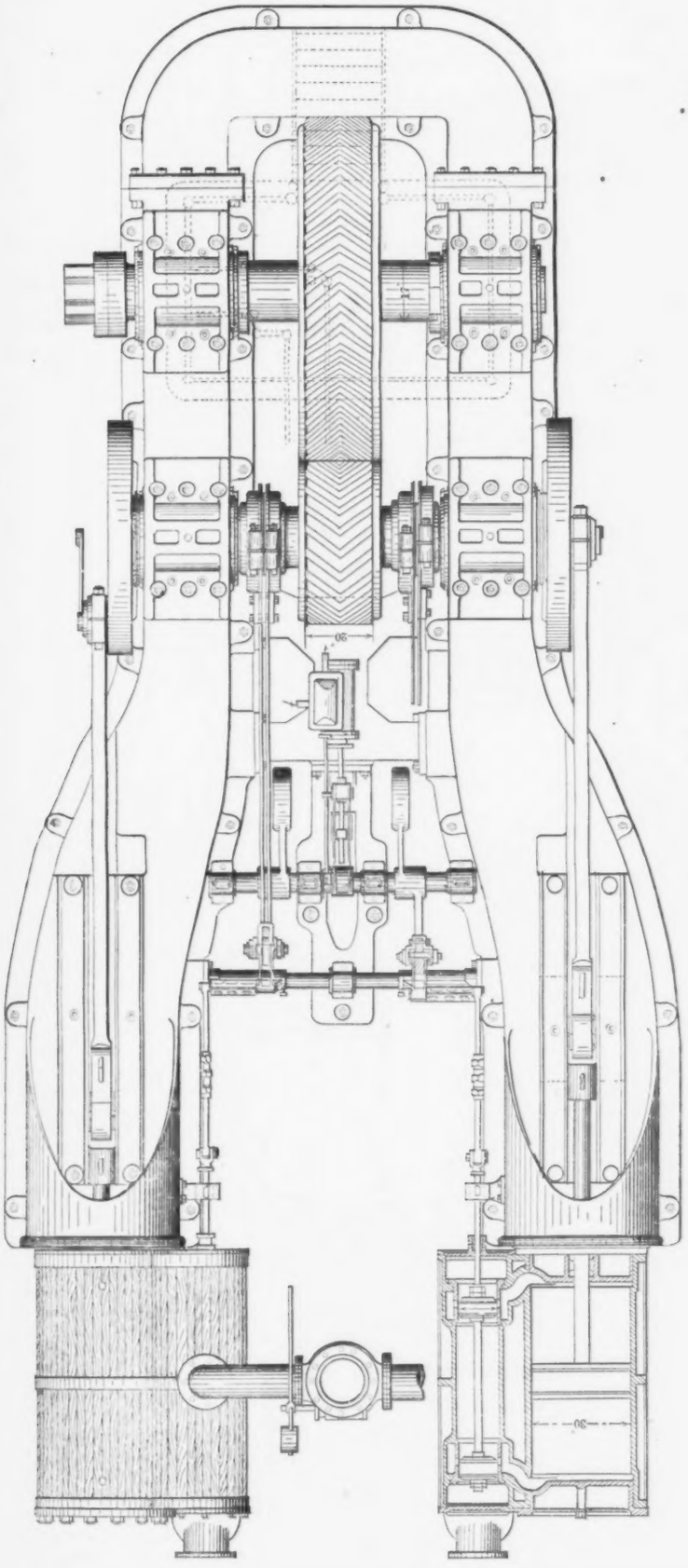


HILLS

UofM

pacity of 2500 pounds, exclusive of the weight of the platform. The iron ladles have a capacity, when lined, of 14,000 pounds of melted metal when filled within 4 inches of the top. There are five steel ladles having a capacity, when lined, of 14,000 pounds of steel when filled within 2 inches of the top. Each ladle is fitted with cast steel trunnions having the fixed castings of the teeming harness attached. The trucks for carrying the bottoms are adapted to a 30-inch gauge, the wheels being 20 inches in diameter.

A small heating furnace, having a heating surface of 15 x 24 inches, is furnished for heating ferromanganese to a dull heat. The three brick drying ovens are each 8 feet wide and 16 feet deep, inside measurement, with a capacity of two bottoms each.



PLAN OF BLOOMING MILL ENGINES.

The vertical blowing engine has the following general dimensions: Diameter steam cylinder, 26 inches; diameter blowing cylinder, 48 inches; stroke, 42 inches; air piston displacement per revolution, 87 cubic feet; speed of engine, 65 revolutions per minute; air discharged at working speed of 55 revolutions, 4835 cubic feet per minute. The cupola blowers are driven by one horizontal automatic fast speed engine of 60 horse-power. The blast receiver is an enlargement of the wind-pipe, is made of $\frac{3}{16}$-inch iron, and connected with the blowing cylinder by a 14-inch pipe. From the receiver extend the 10-inch branch pipes connecting it with each converter.

The hydraulic machinery consists of two duplex hydraulic double-plunger outside-packed pumps of the Worthington type, having steam cylinders 17 inches in diameter, plungers 6 inches in diameter, stroke 18 inches. This pump with 60 pounds steam will work with ease at 400 pounds water pressure. The accumulator has a 13-inch plunger and 10 feet 2 inch stroke, and is capable of working up to 400 pounds pressure.

There is one ladle crane with 13-inch plunger, 42-inch stroke, the mast of which is supported above by a pivot-bearing carried by the chords of the building. The ladle-truck rests on jibs and has a horizontal movement by means of a screw worked by hand, the ladle being rotated by means of worm and worm-wheel. The two ingot cranes have 13-inch plunger, 9 feet lift, with 20 feet jibs. These cranes are of the ordinary Holly type. The cranes are all operated from a common center or pulpit, and are furnished with the necessary valves, levers and rods.

There are two spiegel cupolas with drop bottom shell 45 inches diameter, intended to line to 27 inches below the charging door and 36 inches above. The two spiegel ladles have a capacity when lined of 1000 pounds and are provided with the necessary truck for conveying them to the front of the vessel. Steam for the plant is provided by five Heine patent safety boilers, each having two shells 36 inches in diameter and 21 feet 3 inches long; a steam drum 30 x 96 inches.

THE BLOOMING MILL.

The blooming mill, built by J. P. Witherow, consists of two-high 32-inch reversing mills, the rolls being 66 inches between collars. The housings are closed top and stand upon V bed-plates, the latter extending full length of train. The upper rolls are balanced with steel-yards and balanced weights, and are also carried from the point of the screw by proper appliances. The screws are of steel 7 inches in diameter, fitted into wrought-iron screw boxes. The feet and windows of the housings are truly fitted and planed. The rider and carriages are fitted with Babbit metal bearings, and the first feed rolls on both roller's and catcher's side are carried in housings in proper bushings. The tables are 20 feet long from center of mill on roller's side and 28 feet long on catcher's side, with cast-iron bed-plate full length. The rollers are 5 feet long, 10 inches in diameter. The first eight rollers on each side are made of wrought-iron pipe. The gearing is of steel. The rollers are spaced 14 inches apart and are driven by a line-shaft $3\frac{1}{2}$ inches in diameter through suitable bevel-gearing, as shown in the accompanying drawings, and which is operated by a pair of small vertical reversing-engines, 8 x 12 inches cylinders.

There are two hydraulic engine cranes provided for drawing ingots from the furnace and placing them on the blooming-mill table. This crane has a 13-inch plunger and 8-inch stroke, with a swing of jib of 24 feet. There is one four-hole heating furnace, the capacity of each hole being four ingots. This furnace is of the style now used by the Pittsburgh Steel Casting Company. One small billet crane is provided for the purpose of loading sheared billets on cranes.

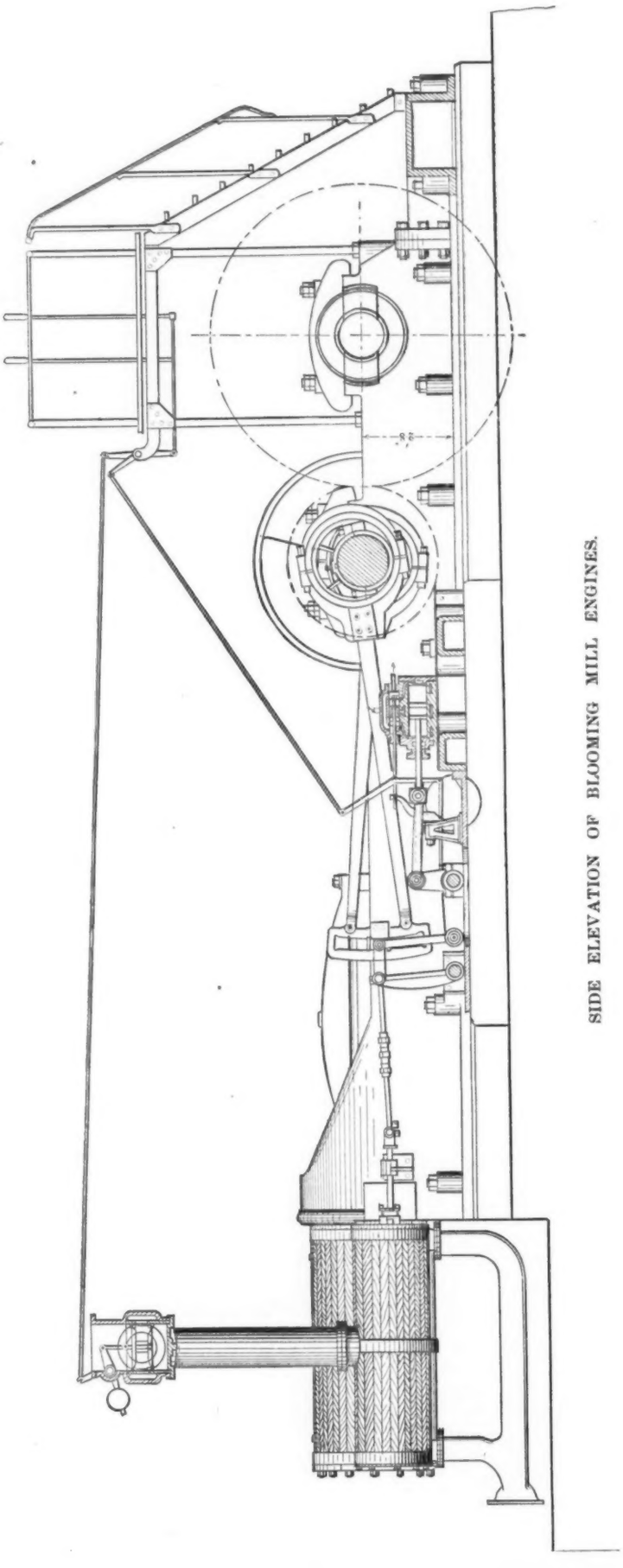
THE ENGINES.

The 30 x 48 inch reversing engines driving the plant were built by William

Tod & Co., of Youngstown, Ohio. The accompanying plan and side elevation show so very plainly the construction of these engines that a detailed description is unnecessary. They are an adaptation of the makers' Porter-Hamilton form to this work, the beds being continued in one casting to receive the counter-shaft, and being firmly fastened together beyond the gearing as well as near the cylinders. Both the links and the link blocks are held centrally by supports on each side, the worker arms being placed directly in front of the links. Piston-valves are used for steam distribution, relief from condensed water being provided by Hartman relief-valves placed underneath the cylinders. While it is usual to use steel gearing in driving blooming mills, in this case iron gears were used. The builders of these engines have always contended that the breakage of teeth in these gears was caused by improper fit, rather than lack of strength, and that properly-made iron gears were not only strong enough, but can be made nearer to true shape and actually wear better than the steel. The pair of gears on these engines seem to bear out this opinion, as they work perfectly without backlash, and show no disposition to give out at any point.

THE SHEAR.

The shear for cutting blooms and the table for transferring the piece from the rolls was built by the Lewis Foundry and Machine Company, Limited, Pittsburgh, Pa., being the fourth of the same size made by them. The chief characteristics of this machine are its compactness and strength of parts, the combination of the engine with and forming part of the machine, all being mounted on one bed and self-contained. The engine driving this ponderous machine has the cylinder 16 inch diameter and 24-inch stroke, has a balanced slide-valve, and is constructed with adjustment for wear in every part; has a fly-wheel 8 feet diameter, 7000 pounds weight, with turned rim, and is accurately balanced. The gearing is in proportion of 26 revolutions of the engine shaft to one stroke of the shear head, and is run to make seven strokes or cuts in each minute. The engine-shaft is 7 inches diameter, intermediate shaft 8 inches diameter, and main shaft is 15 inches diameter forged wrought iron. The motion of the shear is controlled by a clutch on the main shaft, which is separated by a double-acting hydraulic cylinder located between the brackets under the main wheel. The shear is designed to cut 8 inches square or 5 x 20 inches hot steel as it comes from the rolls. The head is operated by a pitman from the eccentric shaft, and the pitman extends into the head, taking a bearing about the center of same; this in connection with the part of the head that extends, forming a guide, below the cubbing edge of the knife, distributes the vertical and side strains, so as to produce equal wear. Attached to and forming part of the shear is a table 52 feet long, extending from the mill tables to the shear. The rollers of this table are driven by the power of the shear itself and controlled by a pair of friction clutches enabling the operator to run the piece to be cut, forward or backward as he may desire. The total weight of shear and table is 135,000 pounds. The opening of the knives is 9 x 24 inches.

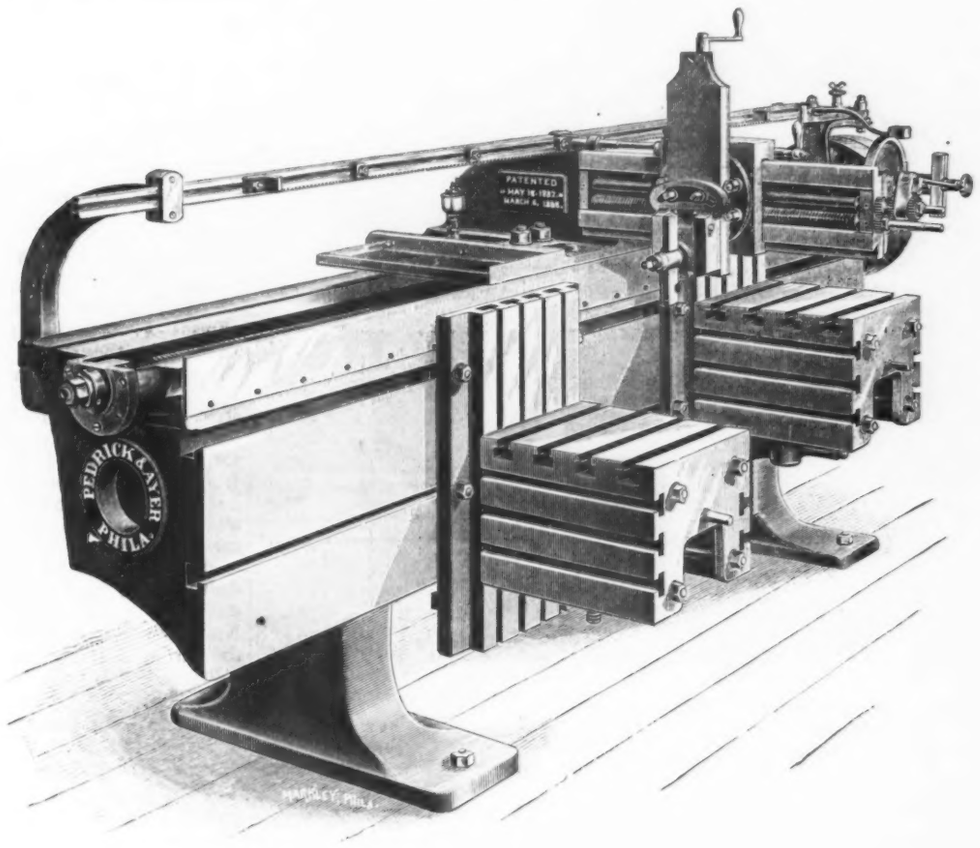


SIDE ELEVATION OF BLOOMING MILL ENGINES.

The enlargement of the St. Lawrence canals to the same capacity of the Welland Canal is being urged upon the Government at Ottawa by influential delegations from boards of trade. Such enlargement, it is claimed, would divert to Montreal the export trade of the Northwest, and at the same time tend to draw a large share of the import trade from Baltimore, New York, Boston and other American seaports to Montreal and Quebec, as merchandise of all descriptions could be more cheaply laid down in Kingston, Toronto, Hamilton, Port Arthur, Winnipeg and Vancouver, as well as in Buffalo, Cleveland, Detroit, Milwaukee, Chicago, Duluth, St. Paul and Minneapolis than by any other route, either rail or lake. It is also claimed that the contemplated improvements would stimulate the growth and successful development of Canadian lake shipping. Now the completion of the Welland Canal without the enlargement of the St. Lawrence canals is building up the American shipping trade to the detriment of the Canadian.

Open-Side Planer and Shaper.

We here present a perspective view of the new Richard's patent open-side planing and shaping machine, which has just been placed on the market by Pedrick & Ayer, of Philadelphia, Pa. A glance at the drawings will convey a good idea of the great capacity of the tool, which combines many of the advantages of both planer and shaper in one convenient and substantial machine. It is, in addition, as well adapted for the ordinary run of work as for the more difficult and troublesome pieces. Some of the principles involved in its construction are well known, and the machine, though unlike other planers, is not new in the sense of an untried theory or experiment, it having been for a number of years past in successful use.



OPEN-SIDE PLANER AND SHAPER.

They are built in different sizes as required, with more or less variety in detail, but are all constructed on the same general plan, and a description of the one illustrated may apply to nearly all.

The bed shown is 10 feet 6 inches long, and the machine will plane 8 feet in length, 25 inches in width and 24 inches in hight when using the square tables. Pieces 42 inches high will clear the arm when resting on the floor, and if the machine is located over a pit, its capacity for difficult work is increased, and by taking advanvantage of the open side, pieces of unusual dimensions may be planed with comparative ease.

The screw running the entire length of the bed is driven by high-speed pulleys and shifting belts without the use of gearing, and imparts a smooth and quiet movement to the traveling carriage and arm that supports the swivel head and cutting tool. This overhanging arm is so proportioned and constructed as to insure the requisite stiffness when used at its outer end, and is cast with or firmly bolted to the carriage or saddle, which is well gibbed to the bed of the machine. The shifting of the belts is accomplished and the movement of the saddle reversed by means of adjustable tappets on the belt-shifting rod above the screw, and the proper speed forward, and the quick return or backward movement is governed by the relative diameters of the pulleys upon the countershaft. The slotted plates and square tables can be set in any position along the bed, or removed entirely when planing heavy frames and castings that require more room in setting, and could not well be done at all, except on large and costly machines. The movement of the cutting tool being parallel with the bed and extending over both tables in the same direction, one of the tables may be set to take the tool thrust at the proper hight, saving time in the setting and fastening of work, as well as providing a solid and convenient stop. Pieces may be planed on one of the tables while fastening work upon the other, and when used in this way will fill the place of two machines. The arrangement of the slotted plates and tables will admit of many changes in the way of fastening work, but whenever a continuous support is needed, or the space between the tables not required, an extra plate or filling piece is bolted between them, making one continuous bed or table of the length required. The length of the stroke permits the use of the table at different points along the bed and prevents the undue wear that might take place if used for a long time in one position.

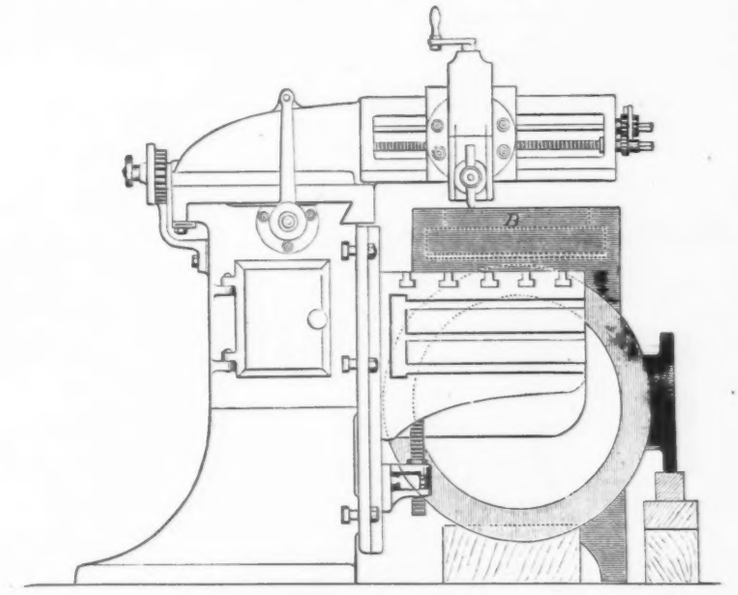


Fig. 2.—Planing Steam-Engine Valve Seat.

Some of the advantages claimed for a movable cutting tool are, that the weight and friction of the sliding carriage or saddle are the same at all times and do not increase with the weight of the work or machines is claimed to be three times that of common planing and shaping machines.

Fig. 3 shows the machine doing several kinds of work, all of which could be fastened at one time if desired. At A is a

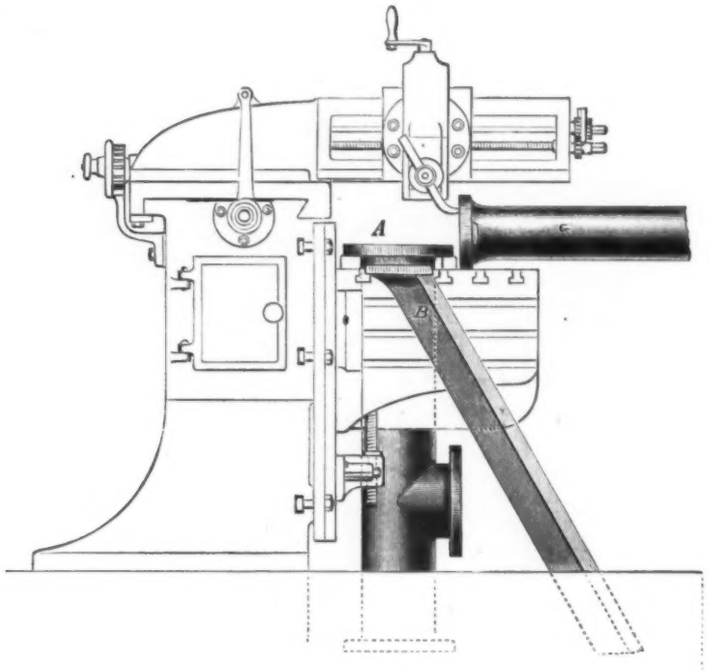


Fig. 3.—Planing Difficult Pieces.

length of machine bed. The work remains stationary and may be conveniently and securely fastened to the slotted plates or tables, so that the cutting tool when planing large or heavy work, may operate at the same hight or level as when used upon the medium and smaller pieces.

As it is hardly possible to fully explain in detail all the conveniences that might be shown for this machine, the points named may, when aided by a careful inspection of the special cuts shown, suggest to the users of planing machines numerous instances where its use would be of great advantage.

Fig. 2 shows the arrangement for planing the valve seat B for steam-engine cylinder. All the planing required for a steam-engine of 20-inch bore has been done on a machine of this kind. For some of the work the machine has had to be raised by putting blocks beneath; but on

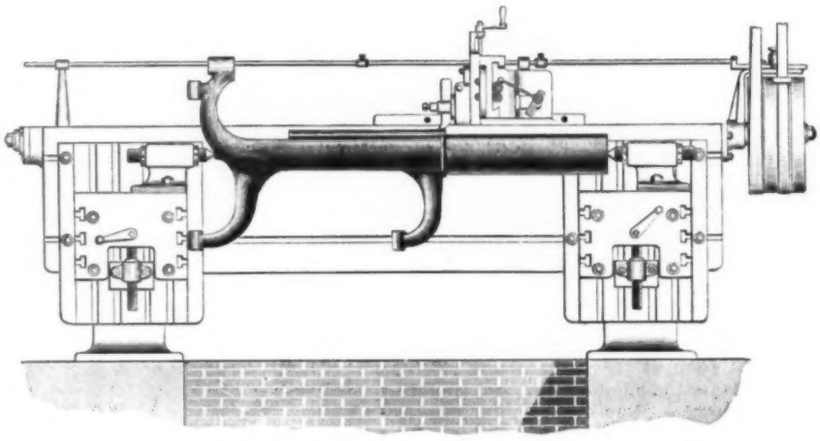


Fig. 5.—Planing Irregular Piece.

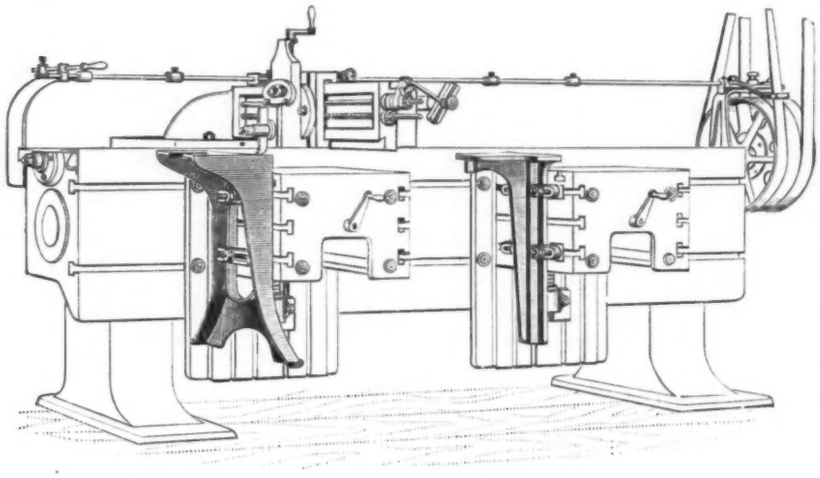


Fig. 4.—Machine Doing Double Work of Same Character.

the whole the work was well and cheaply done. One side of the machine being open, work of any size and form can be set, and as pieces can be readily turned and finished at two cuts, the capacity of these pipe flange being planed, the other end, of any length, extending into a pit, shown by dotted lines. At B the foot of a diagonal brace is being planed, and at G the foot of a stand or column, which could be of any length. None of the work above can be done conveniently on a common planing machine, while here, as before remarked, it is the same as planing flat plates.

The cut, Fig. 4, shows machine doing double work of the same general character. While the work on one table is being planed, the other can be made use of by getting work in position. This saves much time.

The last illustration shows the machine, planing a difficult piece of work that often has to be cast in several pieces to admit of its being done on the ordinary planer.

Customs Decisions.

STEEL WIRE.

The Secretary of the Treasury has rendered decisions in a number of cases upon appeals from assessments of duty upon articles in the metal schedule. In an appeal from an assessment of duty at the rate of 45 per cent. ad valorem on certain steel wire, claimed by the appellant to be dutiable at the rate of $\frac{6}{10}$ cent per pound, for "iron or steel rivet, screw, nail and fence, wire rods, round, in coils and loops, not lighter than No. 5, wire gauge, valued at 3½ cents or less per pound," and returned for "steel, not specially enumerated or provided for in this act." The decision says that the article consists of steel wire not smaller (or lighter) than No. 5 wire gauge, and that it not being the wire rods of commerce, it is not of a character to be liable to a duty of $\frac{6}{10}$ cent per pound, as claimed by the importer.

TINNED WIRE.

On an appeal from an assessment of 6½ cents and 7 cents per pound, respectively, on certain tinned steel wire, and returned by the appraiser as "steel wire No. 44, 3 cents per pound, and steel wire No. 43, 2½ cents per pound," the appraiser reported that "the wire was tinned but not galvanized," and that he therefore assessed duty at the rates of 6½ and 7 cents per pound, for iron or steel wire, "covered with cotton, silk or other material." The appellant claimed that the wire in question was not covered in any sense, but was galvanized, and entitled to entry at the rates of 3 cents per pound and 3½ cents per pound, respectively, which rates are determined by the addition of ½ cent per pound to the rates prescribed for similar wire when not galvanized. The decision affirming the assessment says, as the coating of any metal with tin, either by immersion into melted tin or by the application of tin-foil, constitutes a process known as tinning, which is, according to dictionary definition, "the act, art or process of covering or lining anything

with tin or tin-foil," and as the term galvanizing is commercially applied to the process of coating iron with zinc, the article under consideration, which is admittedly coated with tin and not with zinc, cannot be classified as galvanized wire, nor can it be recognized as wire of iron or steel not covered in any sense, as claimed by the appellants.

CAR-TRUCK CHANNELS.

The Secretary sustains an assessment duty, at the rate of 1¼ cents per pound, on certain articles, returned by the appraiser as "car-truck channels," claimed by the appellants to be dutiable at the rate of 45 per cent. ad valorem as unenumerated manufactures of iron. It appears that although the articles are cut to lengths, punched and riveted together in pairs, thus making them in a measure "further advanced than car-truck channels," as claimed by the appellants, such riveting or bolting at the ends through only two of the six holes is merely done for convenience of transportation if not for the purpose of misleading the customs officers in classifying them.

RAMRODS.

On an appeal from the rate of 45 per cent. ad valorem on certain so-called "parts of fire-arms," and returned by the appraiser as unenumerated manufactures of steel, the appellants claiming that the articles (invoiced as ramrods) are dutiable at the rate 2 cents per pound for the maleable iron castings thereof and 2½ cents per pound for the forged parts, or at the rate of 25 per cent. ad valorem as parts of fire-arms, or, at the most, at 35 per cent. ad valorem as parts of sporting breech-loading shot-guns or pistols.

PARTS OF FIRE-ARMS.

The Department renews its decision that certain nipples, worms and plungers for guns, being simply accompaniments of guns, were dutiable as manufactures of steel not specially enumerated or provided for. While admitting, as claimed by the appellants, that ramrods are parts of fire-arms, the Department rejects their claim that the articles are dutiable as such, inasmuch as there is no provision in the existing tariff for "parts of fire-arms."

ENGRAVED PLATES.

The rate of 45 per cent. ad valorem having been assessed on certain steel engraved plates returned by the appraiser as manufactures of metal not specially enumerated or provided for, and claimed by the appellants to be dutiable at the rate only of 25 per cent. ad valorem for "steel plates, engraved," &c.

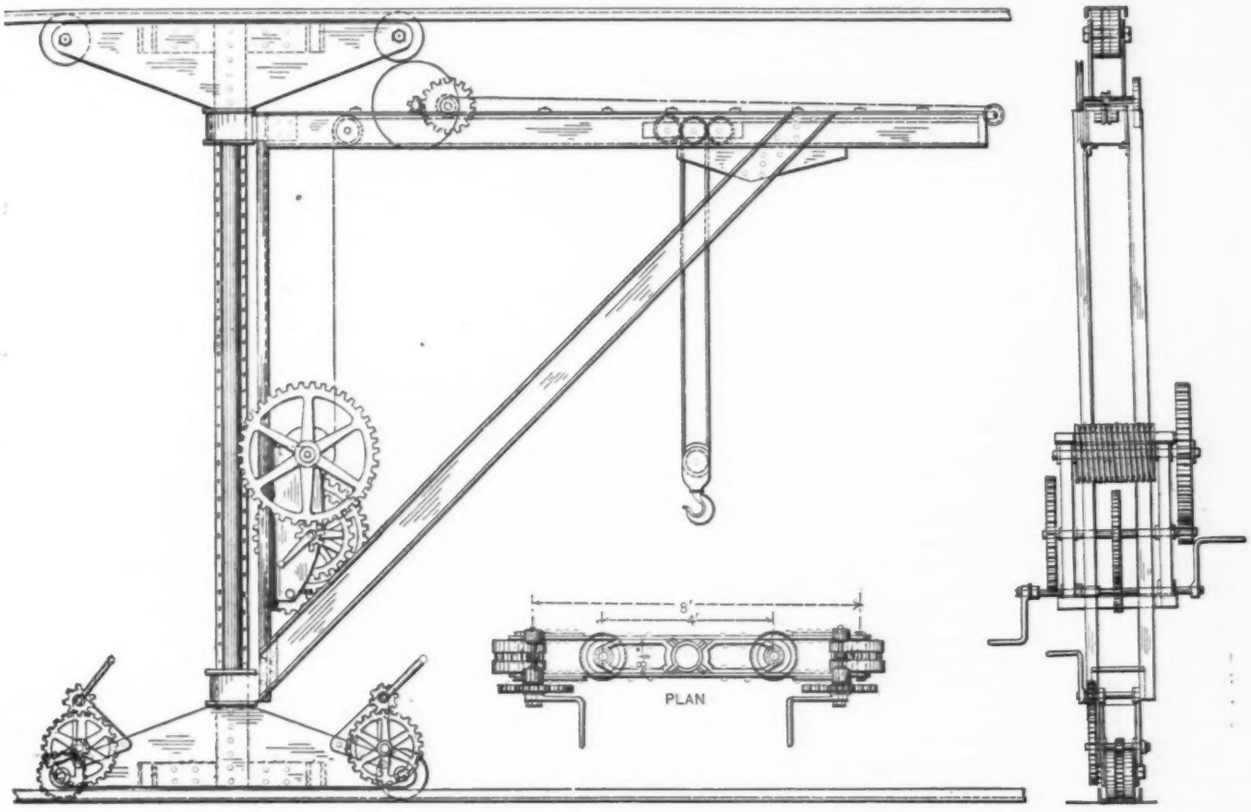
The Department under previous decision decided that certain steel blocks covered by appeal were not the engraved steel plates for use in lithographing or printing as were covered by the then existing provision of law for "plates engraved of steel," but were "forged steel plates or blocks 1 inch or more in thickness, with a design impressed thereon by means of a die, or otherwise than by the tools of an engraver (except in the mere finishing to correct the imperfections of the die), which are manufactured and used for the purpose of embossing or stamping cardboards from a plain surface into raised forms, figures or designs in *alto relievo*," and that they were therefore dutiable at the rate of 45 per cent. ad valorem under the general provision for "All manufactures of steel, or of which steel shall be a component part, not otherwise provided for." The assessment is affirmed.

KEY CHAINS.

In sustaining an appeal from an assessment of duty, at the rate of 45 per cent. ad valorem, on certain key chains, and claimed to be dutiable at the rate of 2½ cents per pound, for "chain or chains of all kinds, made of iron or steel, less than ⅝ inch in diameter." The merchandise consists, the Secretary says, of steel chains with a loop on one end and a catch on the other, intended for use in securing bunches of keys to the person. That in a former decision it was held that certain surveyor's chains were entitled to entry for "chain or chains of all kinds, made of iron or steel," therefore that the chains in question, which are in fact and commercially known as chains, are entitled to entry as claimed by the appellants

Hand-Power Traveling Jib Crane.

At the works of the Aluminum Brass and Bronze Company, of Bridgeport, Conn., is an interesting specimen of a hand-power traveling jib crane, built by Alfred Box & Company, of Philadelphia. The accompaying drawings, side and end elevations and plan, show very plainly the principal features of the crane and the method of operating it. From this it will be noticed that the mast is stepped at the bottom in a triangular base (when looking at it in side elevation), provided at each end with a wheel arranged to roll in a track formed of channel iron, as shown in the end elevation. The upper end of the mast is held in a frame of the same form and the wheels of which run in an overhead track, also of channel iron. On the shaft of each of the lower wheels is mounted a gear with which engages a pinion, the shaft of which carries a second gear engaging with a pinion operated by a crank. It is evident that by turning either of these cranks the crane may be moved in either direction along its tracks. The crane proper is so mounted upon the mast that it may be swung in a complete circle. The operating gear for in and out traverse and for raising and lowering the load is plainly illustrated in the drawings. One of the principal advantages to be derived from this form of construction is the small space occupied by the crane when traveling along its track. Since, when it is swung parallel with the track it occupies no more room in passing through the mill than its own width, while when brought to the desired point it can be easily swung to the required position for handling the load. Further than this is the remarkable stiffness of the mast no matter in what position the crane may be or the extent of the load it carries.



HAND-POWER TRAVELING JIB CRANE.

The Western office of the *Electrical World* has been removed from Room 39, Maller's Building, to Room 465, The Rookery, Chicago. Fred De Land remaining as manager and Western correspondent.

THE WEEK.

The largest wooden steamer on the lakes was launched a few days ago at Wolf & Davidson's yard, in Milwaukee. Her length is 210 feet and her power will be an ocean type triple expansion engine; cylinders 21, 34 and 57 inches by 42-inch stroke. She will have two Scotch boilers, each 12½ feet long and 13 feet in diameter, constructed of $1\frac{1}{16}$-inch steel. A steel arch $\frac{1}{8}$ x 20 inches runs both inside and out the steamer, and the frames are steel strapped diagonally. The Pabst, as she is called, has a water bottom divided into four compartments, which can hold 550 tons of water. This water can all be removed in one and a half hours.

A committee of the Master Builders' Exchange of Philadelphia visited the New York trade schools a few days ago, also the Pratt Institute, in Brooklyn. Out of the 1000 pupils in the institute it was explained that over 200 were engaged in the departments of mechanic arts and building trades. In the New York schools there are now 520 pupils under instruction in bricklaying, plastering, plumbing, carpentry, house and sign painting, stonecutting and blacksmith-work.

The Academy of Natural Sciences, in Philadelphia, will shortly commence the erection of an additional building on the ground south of the present structure, at an estimated cost, exclusive of the furniture, cases, &c., of $250,000.

The first trip of the new electric motor in Detroit was a success, witnessed by hundreds of spectators. One of these cars completed costs $3500.

The Pacific mail steamer China has reduced the time between San Francisco and Hong Kong to 20 days, which is four days less than steamers of the same line formerly required for the trip between San Francisco and Yokohoma.

Lake navigators are of the opinion that boats can reach the head of Lake Superior about May 1, but views on this point are conflicting.

Millions of white fish are being distributed from the hatcheries at Detroit through all the lakes. From 2,000,000 to 8,000,000 of the fry are left at each point of deposit, with the object of fostering an important industry.

The Cataract Construction Company, who propose to build a tunnel around Niagara Falls with a fall of one foot in 100 and to run machinery in factories by means of the water power thus obtained, have signed contracts with the Niagara Falls Power Company. The work of constructing the tunnel will begin, it is said, as soon as the machinery can be procured. The president of the Construction Company is Edward H. Weed.

The principal sewer-pipe works in the Ohio Valley are said to have been purchased for $2,000,000 by an English syndicate, represented by John F. Lees, of Manchester.

President Diaz, of Mexico, at the opening of Congress on the 1st inst., says the internal and external relations of Mexico are peaceful, and that good effects are expected to follow the deliberations of the Pan-American Conference for the New World and the Maritime Congress at Washington for the nations at large. The message refers to the increase in postal facilities and the receipts from postal dues, and recommends that lower rates of postage be charged. The drainage of the valley of Mexico, the President says, is progressing favorably, and it is said that active work is in progress on the Interoceanic, Monterey and Gulf, Yucatan and Southern, and Tehuantepec railroads. Mexico, President Diaz says, will encourage railroad building as being a work of progress. Work in the harbor of Vera Cruz is going forward satisfactorily, and favorable reports have been received from the engineers in charge of the work in the harbor of Tampico, where operations are being pushed. The financial condition of the republic is excellent, and Mexico's credit abroad is stronger than ever before. The message recommends retrenchment in the expenses of the Government.

Senator Collins' bill in the New York Legislature, abolishing the use of machinery for manufacturing purposes in the prisons and providing that goods manufactured shall be for the use of the various institutions of the State, is strongly urged for approval by labor organizations and large delegations are in attendance at Albany to insure its success. The prison wardens and others of the more conservative class are as strongly opposed, so that the discussions taking place are of an animated description.

To defeat the proposed Harlem River Ship Canal, to connect the East River with the Hudson, is an object of earnest endeavor on the part of the New York Central and other railroad companies, whose tracks cross that stream. The work is estimated to cost $11,000,000, which the railroad men pronounce a foolish expenditure. This fact they press upon the attention of the Congressional Committee who visited New York last month to investigate the subject. They object to building a tunnel beneath the Harlem River at a cost of at least $1,000,000, and Colonel Gillespie, who has charge of the river improvement, reports to the War Department that bridges would prove a serious obstruction to navigation. So the subject is hedged with difficulties.

A combined effort is making in the New York Legislature to induce the appropriation of $1,413,000 for the repair and maintenance of the State canals. The railroad companies are jealous of any measures which may prove their strongest competitor.

Few States can show as good a financial record as that of Massachusetts. The auditor's report shows that the State owes a little over $28,000,000. But, as an offset to this, it has sinking funds to the amount of more than $21,000,000, land in Boston harbor which cost about $800,000, and $5,000,000 worth of Fitchburg Railroad common stock. If these last two items should be sold at the cost of the land and the par value of the stock, the resources of the State would only be about $700,000 less than the liabilities.

Work on the excavation for the great dam and reservoirs in the Pegnannock Valley, N. J., from whence the city of Newark will derive its water supply, has been commenced.

Sales of farming lands under foreclosure are numerous in Central New York. A Saratoga letter says: The number of these sales this year is unprecedented. Farmers are leaving their farms, and more are giving up the life altogether than are settling upon new ones. There is not only no money any longer in the business —there does not seem to be even a living. Hay has been sold as low as $4 a ton, oats at 26 cents a bushel, and corn at 40 cents; cows bring only $20, and other farm necessities are proportionately low. The wages of male help are as high as $25 per month, and the hired man at the end of the year has made more than his employer. Many farmers in this section do not intend to plant this year. They run behind the best way they can manage it. A farmer with his place free and clear is more than likely, after paying his farm hands, to be in debt after harvest. Add to the situation a mortgage, on which interest must be paid, and the outlook becomes gloomy for the farmer and not bright for his creditors. Many foreclosure sales of farming lands will take place before the year is out.

Colonel Gillespie, of the United States Engineer Corps, has decided that the bridges over the Harlem River at Third and Fourth avenues, in this city, are obstructions to navigation. The Harlem and Hudson River Railroad companies will therefore, from present indications, be obliged to tunnel the river or build bridges high enough for the shipping to pass underneath without the necessity of draws.

The House Committee on Claims proposes to pay to the assignees of John Roach $56,077.97 compensation withheld by Mr. Whitney on the building of the Dolphin and in the care of the Puritan.

The annual report of the pork packing of Chicago says the total number of hogs reported packed during the winter season, from the reopening of the packing-houses in October until March 1, was 2,179,440, an increase of 749,715 compared with the returns of 1888–89. The total number of cattle slaughtered was 2,206,185 during the year ending March 1, 1890, against 2,032,327 for the year previous and 1,963,051 for the year before that. The winter packing of pork at Cincinnati, according to figures prepared by the Chamber of Commerce, shows an aggregate of 271,513 hogs. The average cost per 100 pounds is $3 74.43, a decrease from last year's cost of $1 40.33. The aggregate number of hogs packed has not been so small since 1846–47, when it was 250,000.

A resolution before Congress proposes a co-operation of commercial nations in maintaining an ocean patrol, with special reference to the relief of disabled steamships—*e. g.*, the City of Paris. A good idea.

Among the signs of progress in Western Canada, as the region west of Lake Superior is now beginning to be called by Northwesters, may be mentioned the organization of boards of trade in the young and growing towns. According to the report of the council of the Winnipeg board for the year 1889 there are now in existence, west of the lakes and east of British Columbia, boards of trade in Port Arthur, Rat Portage, Winnipeg, Portage la Prairie, Brandon, Virden, Manitou, Regina, Moose Jaw, Edmonton and Prince Albert. The act requires for such organization not less than 30 merchants, traders, brokers, agents, mechanics, &c.

Frederick A. Lockwood, of Boston, contractor for the Cape Cod ship canal, has transferred all his interest, including deeds and property in the project, to Col. Thomas L. Livermore. According to one report, the transfer is only a step toward the final disposition of the franchise to New York capitalists. The charter expires next year.

The plumbers of Chicago are to strike for an advance of 15 cents an hour. This is a serious demand, as even on the basis of the eight-hour day it involves an increase of $7.20 a week, or nearly the amount earned by unskilled laborers.

Samuel Z. Thayer, of the United States Legation at the Hague, writes to the Mayor of Detroit, describing the brick pavements used in Holland, which he commends.

A. Hanna & Co., of Cleveland, rank among the heaviest producers and shippers of iron ore, pig iron and coal in the West, employing 2500 operatives in the

Cleveland neighborhood and at their mines in the Marquette and Gogebic iron mining districts, besides being interested in the Globe Iron Works Company, a fleet of steel steamships, &c. Four steamships recently built by the company had steam put on about a week ago for the first time.

A crowd of nearly 2400 dilapidated Italians, who landed at Castle Garden, had in their possession for exchange a total of $84.

The plant for the Chicago Shipbuilding Company is being erected and the keels for two new boats will be laid early in May.

A Japanese syndicate has been formed in Northern Japan for the purpose of developing the coal mines of that region, which are said to be good for 1,000,000 tons a year. The project includes the construction of a railway system, and the expectatien is to export coal in large quantities to China and America. N. Tomonari, a civil engineer from Japan, is examining the system of railways in the United States as a representative of the syndicate.

A Washington correspondent says there will be no money appropriated for a new Custom House building at New York at this session of Congress. The understanding is that the appropriation of $2,600,000 now lying in the Treasury will be increased by a further appropriation this spring of $500,000 more, making in all $3,100,000. Of this sum $1,650,000 will be used to purchase a Custom House site in Bowling Green, and the remaining $1,450,000 will procure the site and erect thereon the appraiser's stores at some designated point uptown.

A contract for a submarine cable between Brazil and the United States has been awarded to French companies. An ordinance adopted by the New York Board of Aldermen, and which become a law on Wednesday of last week, allows truckmen $1 an hour while waiting at the piers to unload. Merchants of all classes will be in arms to resist demands of this character, and there is little probability that the law can stand when its constitutionality is put to the test.

Bills are pending in the New York Legislature for a new bridge across the East River at Grand street and another at Blackwell's Island, for a new bridge over the Harlem, and for a great bridge across the Hudson. A tunnel is already boring under the latter stream, and a franchise for constructing one under the East River and across the city is pending before the Board of Aldermen for its "consent." The question of relieving the obstruction of the Harlem by the existing drawbridges is under investigation, and there is a scheme on foot for a sort of toboggan slide under the East River for shooting passengers back and forth between this city and Brooklyn.

A new engineering building at Swarthmore, Pa., is contemplated. The plans provide for laboratory work in mechanics, comprising the testing in several ways samples of different kinds of wood and metals.

The New York Chamber of Commerce favors the construction of the proposed East River tunnel, despite the objections of the city authorities.

Cheap through freights from New York to St. Paul and the Northwest are promised as the result of recent conferences in this city, in which the Great Northern Railway and the Lake Superior transportation lines have taken no active part. The St. Paul *Dispatch* says the solution of this problem, "if it is only ratified and enlarged in its scope by the action of Congress during the present session will go a long way toward shaping the future of these two cities, and will hasten the fullest development of the Northwestern States, which has had to wait too long already upon the inaction and neglect of the National Legislature. When the work is accomplished at the 'Soo,' which will give a clear waterway of 20 feet deep to the commerce of the Northwest, the ability of the rail routes via Chicago to compete with the Lake Superior carriers will forever be put at rest."

The New England Shoe and Leather Association, in a petition to Congress, represent that "the imposition of any duty upon raw hides and skins would cause great embarrassment to the large export trade, now amounting to almost $12,000,000 annually, and would tend to drive it to the Dominion of Canada, where labor and materials for tanning are much cheaper than they are in the United States."

The Castle Garden Emigrant Commission have received overtures from the federal Government for the continuance and occupation of the landing at the Battery, for an indefinite period. In any event the discussion has shown that the use of Ellis Island as a place of deposit for powder and high explosives endangers the city, and it is shown with some degree of plausibility that Liberty Island should be permanently dedicated as marking the gateway to the city, from the sea.

The New York Fire Underwriters' Association have adopted a standard fire-door, to be made of inch boards of two thicknesses laid diagonally across each other, nailed with wrought nails, covered with sheet tin secured by cleats of zinc and hung on iron hooks. The doors must have an iron sill and the jamb must be of angle iron with a wrought iron catch for the latch and flaring iron dogs at the bottom. Many other details are prescribed.

A fire broke out in one of the cabinets of the drawlock division in the Custom House on Sunday evening and valuable documents were destroyed. The origin of the fire is mysterious.

A letter from Salt Lake City says that the Mormon defeat has inspired investors with confidence, and a tide of new life and new money is rolling in, which has already caused real estate values to advance 200 per cent.

It is not uninteresting to note New York's position in the export trade in oil. During the year 1889, 5,620,000 barrels were exported from this place and 14,936,403 cases of 10 gallons each. Philadelphia exported 2,087,121 barrels and 5,408,119 cases. Baltimore exported 173,210 barrels, and Boston 22,761 barrels and 20,949 cases. The total export of oil for 1889 was 7,903,093 barrels and 20,365,471 cases.

Caldwell, N. J., proposes a railroad connection with New York by means of a shore feeder to the Delaware, Lackawanna and Western Railroad to be built at a cost of about $100,000.

The collapse of speculations in Wall street is attended of late by curious phenomena in the number of "to let" notices everywhere conspicuous, more particularly in the Stock Exchange district. The excess of office accommodations now so painfully apparent to owners of real estate is in part due to the numerous office structures erected during the last few years, representing an investment of several millions of dollars, until at last a "war of rents" has broken out. Still, it is doubtful if there are even now too many buildings in Wall street were Wall street and Wall street business in normal condition. But it happens that the normal condition just now is lacking.

MANUFACTURING.

Iron and Steel.

Newport secured the plant of the Standard Pipe and Steel Works. The question was left in the hands of J. Dimmick to decide where the location should go; whether to a distant city in Ohio, where many acres of land and a cash bonus were offered, or to Newport, where good-will, friendship and numerous facilities awaited them only. Mr. Dimmick said Newport. Recently the land was secured, and George K. Lindsay and a corps of assistants were put to work at once to lay out the lines for the immediate erection of the buildings. While this work is going on machinery and tools will also be put in place and the superintendent claims that by the latter part of November all the machinery will be in active operation. The place selected by the firm is at the eastern portion of Harris street and Park avenue, and runs southwardly to the edge of the Central and Ohio Railroad tracks. The works proper will occupy 10 acres of ground, and 15 acres more of the bottom land will be utilized as a dumping place for cinders and other refuse.

In some of the Pittsburgh papers of last week appeared an item to the effect that the W. Dewees Wood Company, of McKeesport, Pa., were about to purchase a site for a rolling mill at Duquesne, Pa. The report further stated that the present quarters of the company at McKeesport had become too small. We are advised that there is no truth in the statements whatever. The firm have all the property at McKeesport that will be required for their business for many years to come.

Clinton Furnace of the Clinton Iron and Steel Company, at Pittsburgh, which is being rebuilt, will be ready for blast some time during this month. The furnace has been considerably improved and enlarged and will turn out about 100 tons per day when in operation.

Soho Furnace of the Moorhead-McCleane Company, at Pittsburgh, turned out 5773 gross tons of pig iron for the month of March just closed.

At a meeting of representatives of the Oliver Iron and Steel Company, of Pittsburgh, and of the Amalgamated Association of Iron and Steel Workers, held on Friday, the 4th inst., the strike at the mills of the firm was settled. Concessions were made by both sides and the terms are satisfactory to all concerned. The entire plant of the firm has again resumed operations.

The Carrie Furnace Company, of Pittsburgh, whose blast furnace plant is located at Rankin, Pa., are building a water-tower, which is 30 feet in diameter and 35 feet high, with a capacity of nearly 200,000 gallons. The water will be used to supply the tuyeres and coolers around the furnace and for cooling the coke at the coke ovens of the company. To facilitate the handling of their fuel the company will lay a track and the coke will be taken from the ovens to the hoist in cars drawn by a light locomotive.

Fannie Furnace of the Wheeler Furnace Company, at West Middlesex, Pa., which has been idle for some time undergoing repairs, was put in blast last week.

The Piqua Rolling Mill Company, Piqua, Ohio, whose product is entirely controlled by the Cincinnati Corrugating Company, of the same place, state that they have broken the record in the length of time in constructing their mill plant. They first broke ground in the early summer of 1889, and inside of five months completed the entire plant, which has been running ever since, with the exception of one or two short intervals, the machinery working

smoothly from the very start. Two Hamilton-Corliss 500 horse-power engines furnish the motive power. These engines are connected directly with the mills, three in number, having a capacity for turning out 20 tons of finished product per day. The two muck shears are run by an independent engine. The Lewis Foundry and Machine Company, of Pittsburgh, are credited with furnishing the entire outfit, with the exception of the Hamilton-Corliss engines, which were put in by the makers, Hoovens, Owen & Routschley, of Hamilton, Ohio.

Furnace 3 of the Debardeleben Coal and Iron Company, at Bessemer, Ala., was blown in 22d inst. Another furnace at the same place will be blown in this week.

A Knoxville dispatch says John H. Inman, C. M. McGee and several other capitalists are about to build one of the most extensive steel plants in the country on the Lenoir estate, near that city.

The rolling mill and office of the Johnson Forge Company was destroyed by fire Sunday morning, with much valuable machinery. The forge mill, with five puddling furnaces, was saved. The company manufactured car axles, and 100 men are thrown out of work by the fire. The loss is between $10,000 and $15,000.

The West Superior Iron and Steel Company, of West Superior, Wis., having secured the location at that point of the plant of the American Steel Barge Company, propose to build a Bessemer works and a rolling mill for steel plates, beams and structural shapes. The same concern are now running part time a pipe foundry, and have put in the foundations for a blast furnace.

The Allegheny Bessemer Steel Company, of Pittsburgh, whose plant is at Duquesne, Pa., have received an order for 10,000 tons of steel rails from the Atchison, Topeka and Santa Fe Railroad. They are to be delivered by September next.

We are advised that the report that the Youngstown Steel Company, of Youngstown, Ohio, were about to build a large addition to their plant is without foundation.

During the month of March there was produced at the Edgar Thomson Steel Works of Carnegie Bros. & Co., Limited, at Braddock, Pa., over 30,000 tons of steel rails. This is the largest output for a single month in the history of the plant.

From the Catasauqua (Pa.) *Dispatch* of the 5th inst. we take the following: The deed transferring five acres of land, at Slatington, from Elias Remaley to the Hopkinses for the site for their rolling mill, was signed, executed and delivered last week. A company will be chartered at once to build and operate the mill. The new industry, when in full operation, will give employment to 175 hands. The building will be 240 x 80 feet in dimensions and will be equipped with ten puddle furnaces, a guide frame and a puddle frame. Guide iron will be manufactured. L. H. Focht, of Reading, has been awarded the contract to erect the mill and the Scott Foundry, of Reading, will furnish the engine. Work will begin at once.

The Bristol Iron and Steel Company, Abraham S. Patterson, president, will build a blast furnace at Bristol, Tenn. Frank C. Roberts, civil engineer, Philadelphia and Pittsburgh, has been appointed supervising engineer. The plans, materials, workmanship and erection will be subject to his inspection and approval. James P. Witherow has been awarded the contract for the entire work.

Machinery.

The Westinghouse Electric Company, of Pittsburgh, have received an order from the Metropolitan Mfg. Company, of London, England, for 750 Shallenberger alternating current meters. This is the largest order yet received. The same company ordered 350 a short time ago.

Wm. Frech, of 68 West Monroe street, Chicago, manufacturer of punching machinery, machine tools and patent articles, is about to remove the larger part of his plant to Streator, Ill., where he has built a machine shop and foundry. The machine shop is 42 x 160 feet, two stories high; the foundry is 50 x 125 feet, and there is also a blacksmith shop 30 x 70 feet. Mr. Frech will transfer the greater part of his work to Streator, but will maintain a repair and jobbing shop at Chicago, as well as his office and salesroom. The new works have long been needed to enable him to serve his customers promptly.

The Leechburg Foundry and Machine Company, of Pittsburgh, have received a large order from the Troy Steel and Iron Company, of Troy, N. Y., for ingot molds, which they will begin making and shipping at once.

The plant of the Midgley Wire Belt Company, at Beaver Falls, Pa., is being operated to its full capacity to meet the demand for their belting, and wherever introduced it has given excellent satisfaction. The firm recently placed a wire belt 12 inches wide and 70 feet long in the works of the Washington Zinc Company, at Lynchburg, Va., and have received a letter from the company in regard to it, from which we make the following extract. "In reply to your inquiry about our wire belt, I am pleased to say that it is beyond question the best belt I have ever used. We use it in the capacity of main driving belt for our heavy crushing plant, mixing machinery and brick machine. Our power used is 75 horse-power engine, and we estimate we actually use about half of it. The belt is 12 inches wide woven steel wire and about 70 feet long. The two month's use show no sign of stretching or slipping. In fact, it seems to me perfection."

The J. C. McNeil Company, of Akron, Ohio, manufacturers of boilers, have found it necessary to enlarge their facilities in order to keep pace with the demand for their manufactures. At a meeting of the directors, held recently, they decided to purchase a site and erect a new plant, which will consist of a one-story brick 70 x 20 x 20 feet, a frame shop 40 x 150 x 12, a brick shop 20 x 70 feet, to be used for special machinery, such as flanging machines, plate benders and a dishing press. Another brick machine and engine-room 20 x 50 feet, a boiler-room 24 x 48 feet, and a blacksmith shop 20 x 30 feet will also be erected. The capital stock was also increased from $50,000 to $100,000. Work on these improvements has already been commenced.

The Ohio Pulley and Machine Company have been organized at Warren, Ohio, and will be incorporated as soon as possible with a capital stock of $25,000. The company will manufacture split-wood rim pulleys and do a general machine business. C. H. Bird, of Kalamazoo, Mich., will be manager. Employment will be given to about 50 men from the start.

The Narachar Sprinkling Company have been incorporated at Warren, Ohio, with a capital stock of $70,000, for the purpose of manufacturing automatic fire extinguishers. The plant of the company will be located near that of the Paige Tube Company, and employment will be given to a large force of men.

The Cleveland Twist Drill Company, of Cleveland, Ohio, have just completed one spiral profiling cutter 17 inches long and 5 inches in diameter, with a 2-inch hole. This cutter weighed 102 pounds in the rough, was made from the solid, and is a perfect tool in every respect, without flaw or blemish. It is the largest solid cutter ever attempted.

PERSONAL.

Mr. Robert Story has resigned his position as the Philadelphia manager of the business of Park Bros & Co., of Pittsburgh. Mr. Story is about to engage in an important enterprise in connection with Eastern capitalists, which will add another to the many and varied interests carried on in Philadelphia.

Thomas A. and R. G. Gillespie have resigned their offices as superintendent and assistant superintendent of the Philadelphia Natural Gas Company, at Pittsburgh, to engage in business for themselves as pipe line contractors. Their successors have not been named yet.

W. L. Abbott, chairman of Carnegie, Phipps & Co., Limited, of Pittsburgh, sailed for Europe on the 29th ult., on a pleasure trip. He expects to be absent until about June 1 next.

G. W. Morris, of A. French & Co., spiral spring manufacturers, at Pittsburgh, returned to his home last week, after a four months' visit in South America. Mr. Morris gives some interesting statements relative to that country. He thinks that the establishment of proper means of transport would open a good outlet for Pittsburgh steel, iron and electric products. At present there is only one line of vessels.

William H. Weightman, consulting mechanical engineer and patent expert, has removed to the Para Building, 35 Warren street, New York City.

A. J. Forbes-Leith, of the Illinois Steel Company, has sailed for Europe.

Ex-Mayor John A. Roche, of Chicago, has been made general manager of the Crane Elevator Company, manufacturers of passenger and freight elevators. He will retain his connection with the firm of J. A. Fay & Co., whose Chicago branch has been under his management for many years. He has removed the latter to new quarters, at 22 to 26 South Canal street.

Dr. Gideon E. Moore, consulting chemist, will remove his analytical laboratory and assay office on May 1, from 69 Liberty street to 221 Pearl, corner Platt street.

Mr. H. W. Merchant, junior member of the firm of Merchant & Co., Philadelphia, sailed Wednesday on the steamship Lahn, for Europe. Mr. Merchant goes abroad in the interest of the firm.

The firm of Charles W. Gleason & Co., composed of Charles W. Gleason and R. H. MacFarland, have, since the first day of January last, been engaging in the handling of pig iron, iron ores and coke, their offices being at 32 Liberty street, New York. They are the Eastern agents for Spearman, Hubbard-Scotch, Seneca, Coplay and Lehigh.

William Kent has established himself as consulting mechanical engineer at No. 41 Park row, this city. He has been appointed New York representative of Hunt & Clapp, of the Pittsburgh Testing Laboratory.

At a recent meeting of the Western Pennsylvania Engineers' Society, held at Pittsburgh, Capt. A. E. Hunt, of the Pittsburgh Reduction Company, announced the coming to Pittsburgh in October of the British Iron and Steel Institute, and upon his motion it was decided to appoint a committee of five to co-operate with the American Institute of Mining Engineers in entertaining them. The committee will be appointed later.

The Iron Age

New York, Thursday, April 10, 1890.

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Cause of the Decline in Pig Iron Prices.

For some months past our blast furnace statements have shown that the production of pig iron was increasing at a most extraordinary rate. The figures were received with a placidity indicating supreme confidence in the ability of the country to absorb without difficulty the immense output. Prices continued to advance with the increased yield thus apparent, as though large product and high prices were harmonious conditions. It is true that consumptive requirements were increasing at the same time, but it is also undoubtedly true that the increase was not of an extraordinary character. The needs of the coming year were not forestalled to any great extent in finished material. There have been occasions in the past when railroads have bought huge quantities of rails in the last few months of a year, and it was then known to a certainty that the rail mills would be taxed the next year to their utmost capacity. But in November and December of the past year the rail trade was practically at a stand-still, with the capacity of the mills only partly covered for 1890. The greatest activity in anticipating the future was on the part of furnacemen securing their ore supply. Provision was thus made for a very large output of pig iron to meet a possible demand, the hope of which was based on the activity in general steel products in the last half of 1889. That hope has proved illusive, and the cause is probably not hard to locate. There has simply been an overproduction of pig iron.

The best demonstration of the overproduction of pig iron can be made by a reference to the yearly consumption of pig iron in this country in connection with our monthly reports of the condition of blast furnaces. The consumption is found by adding together the production of pig iron, the imports and the unsold stocks on hand at the beginning of the year, and deducting the unsold stocks on hand at the close of the year. This is, of course, not strictly accurate, as many consumers may carry over heavy stocks in their yards, but as they are likely to do so at the end of every year, probably no serious variation would arise from that cause. The consumption of pig iron in 1889 was as follows on this basis:

	Gross tons.
Production	7,604,525
Imports	142,230
Stocks January 1	300,144
	8,046,899
Stocks December 31	247,679
Consumption	7,799,220

As the consumption of pig iron in 1888 was only 6,688,744 tons, the increase over that year was 1,110,476 tons. The consumption in 1887 was a little larger than that of 1888, having been 6,808,386 tons It was very much larger than that of 1886, when 6,191,354 tons were consumed in this country. In no previous year did the consumption approach 6,000,000 tons. Now, the consumption of 1889 was so much in excess of that of any previous year that the question arises, will the same rate of increase obtain in 1890? At present writing this seems unlikely. There will be an increased demand for steel rails, and more iron than last year will go into railway rolling stock, while at the same time there will be a natural increase in general, owing to the growth of population and the extension of all sorts of enterprises. In no quarter is there any sign of an especially heavy demand which will carry the whole iron trade with it. The possible curtailment of imports of iron and steel will add something to the demand for domestic pig iron, but not much in proportion to the total consumption. If all our import trade were to be cut off, except Swedish bars, spiegel, scrap and tin plates, it would represent the following quantities, based upon last year's purchases abroad:

	Gross tons.
Steel rails	6,202
Cotton ties	20,815
Steel plates	14,014
Steel blooms, &c	72,362
Sheet and plate iron	7,032
Wire rods	73,768
Wire and wire rope	4,093
Anvils and forgings	1,400
Chains	621
Total	200,307

Estimating 25 per cent. as the waste of pig iron in making finished material, the above total represents, say, 250,000 tons of pig iron. Adding that to the consumption above given for 1889, we have a grand total of 8,049,604 tons as a possibility for a year of trade similar to that of 1889. Taking 52 weeks to the year, these figures represent a weekly consumption of 154,800 tons of pig iron.

Now we turn to the other side of the question. Our blast-furnace returns show that since November last we have been producing pig iron at a rate far in excess of the consumption of 1889, even with an allowance for heavily curtailed imports. On November 1 the weekly capacity of the furnaces then in blast was 165,225 gross tons; December 1, 169,151 tons; January 1, 174,038 tons; February 1, 173,651 tons; March 1, 180,991 tons. Compare these figures with a weekly consumption of 154,800 tons. An increase in the consumption of last year by nearly 20 per cent. would be necessary to preserve the equilibrium between supply and demand. But the production of pig iron bids fair to be increased from the continued blowing in of new and very large furnaces. In the light of these figures, is it any wonder that the price of pig iron has declined? Is there not a very strong argument for an immediate curtailment of production to prevent even greater demoralization and possibly financial disaster?

The Two Silver Bills.

Mr. Windom's Currency bill was amended last week by the House Committee striking out the repeal of the existing law in relation to the purchase of from $2,000,000 to $4,000,000 in silver bullion per month for coinage purposes, so the bill as it now stands may be summed up in these words: That from $2,000,000 to $4,000,000 per month shall be invested in silver bullion at its market value, such bullion to be deposited in the Treasury vaults; and an equal amount of paper currency based upon it shall be issued, which paper is redeemable into this same bullion, coined or otherwise, in accordance with the bullion's market value at the date of redemption. The Senate Silver bill commands the purchase of $4,500,000 monthly, which in like manner may be stored in the Treasury vaults; and against it shall be issued Treasury notes of equal value, which notes shall become legal tender, therefore interchangeable with gold and all present forms of curreney. The differences between these two bills are not so great that they cannot be united before Congress votes upon them, for the Treasurer's privilege of buying $48,000,000 per annum in Mr. Windom's bill could be easily graduated to meet the Senate bill's requirement of $54,000,000, and the legal tender quality of the Senate bill could be merged into Mr. Windom's bill. Thus the two, minor details not considered, by uniting could receive the votes of the friends of each.

The present laws, in contrast with the above bills, coining 71 cents into $1, while increasing our circulating medium about $2,000,000 monthly, is generally condemned on the ground that for foreign purchase such coin or its certificates are worth only bullion value; and the continuance of a silver coinage on such a depreciated basis is highly likely to lead to trouble if indefinitely continued. The new bills overcome this last danger, and the Senate bill overcomes the discount now charged in London against the bullion value of the present silver certificates by making the new certificates or Treasury notes interchangeable with gold. Even with these marked advantages over our present method, the bills in question are condemned outright and in severe language by prominent people on the ground that they will accumulate a mountain of silver in the vaults of our Treasury, which not only benefits nobody, but becomes a menace to commerce, with no fixed standard of valuation. With the legal tender privilege it is an attempt to make our currency conform to a double standard, a feature that all European Governments have practically abolished. To this objection may be added that the purchase of $54,000,000 silver bullion per annum, so long as that amount is not all that the market yields, makes of our Government a speculator in silver. There is no guarantee that the bullion value may not vary 25 per cent. or more, either way, two years hence. But so long as the legal tender clause is maintained, the Government would be the gainer or

loser in the speculation, and not the holder of the Treasury certificates. But is such a speculative characteristic essential or even desirable for the coming currency, particularly when this bullion's value is the guarantee of the Treasury note's face? What kind of security is that against which full value advances are made, when it may or may not widely fluctuate in the open market? No bank would accept such collateral and advance the market's quotation of value upon it.

Besides the silver mining interests, these bills have been denounced by another class, who would have our Government adopt a paper currency, convertible into a bond with a fluctuating rate of interest, to maintain it at par in London as well as New York. They urge that so long as this value of silver bullion must be guarananteed by the Government, a currency might be issued founded upon that guarantee alone. Still another class, and it is pretty large, insist that there is too much tinkering with the currency and that it should be let alone. This last idea is forcible enough and appeals to the minds of a great many of our people; but the circumstances will hardly permit such a course, because the existing methods of our circulating medium contain serious disadvantages.

Building Trade Disturbances.

As the 1st of May approaches, the labor situation in the building trades becomes more threatening. The probabilities now seem to be strongly in favor of serious interference with building operations in a number of the large cities. It is possible, of course, that a great part of the disturbance now impending may be averted by prudent management and the adoption of conciliatory measures, but the attitude of some of the trades unions would seem to leave no ground for hope in this direction. They demand a limitation of the working day to eight hours, with no corresponding decrease in pay. In some instances, in fact, higher wages are demanded for eight hours work than were formerly paid for ten hours. Another demand now being made by trades unions is uniformity in wages without regard to skill. They propose, however, to secure this uniformity by leveling wages up to the maximum prevailing in the trade and not by making any reductions.

The spirit of discontent prevailing among these classes of workingmen is so great that some of them cannot wait until the 1st of May to participate in a general strike, but have already abandoned their jobs. The Chicago plumbers are among these. About 1000 workmen have struck for uniform wages, as there was nothing else to strike for. They had already been conceded the eight-hour day and their wages were admittedly very fair for the character of work each was capable of doing. The carpenters in that city have also been very impatient, and do not propose to wait until the 1st of May to settle their financial future. Their demands are for an eight-hour day and uniform wages. In St. Louis the trades unions seem to have fixed the 1st of May as the time for a general strike for an eight-hour day, and all of them will observe that time. The workingmen there are making demonstrations in order to show the employers the strength of their unions and the determination to fight which now governs them.

If these disturbances in the building trades are not settled very speedily, and if possible in advance of actual strikes, much harm will be done to general business at a critical time. So many industries are dependent upon building operations that a partial cessation of work in that line during the regular season is widely felt. But more important yet is the fact that those intending to build costly structures may defer them until another year, by which time they hope these troubles will have been settled, if not permanently, at least for a few years.

Another cause for anxiety concerning these building trades strikes is their contagious influence. The strike disease, once it is fairly started, spreads rapidly to other lines of trade. Even now unions are being formed among hitherto unorganized workingmen, such as metal pattern-makers, who propose to secure for themselves an eight-hour day and uniform wages. If other workingmen can obtain such advantages, why should not they endeavor to improve their own condition? The iron molders are also discussing the situation with much interest, and it would require but a little favorable wind to fan these smoldering embers into a flame of discontent, ending in a widespread strike. Machine-makers' unions are being formed in the Western cities also, and workingmen are flocking into them in large numbers, in the hope of securing through the union shorter hours of labor and more pay. The bituminous coal miners of the West are also oganizing with the same end in view. Taking all these matters into consideration the condition of labor is a serious one and calls for the most delicate and careful treatment, in order to avoid a great deal of trouble and financial loss.

Charles Kirchhoff, Sr., for upward of 17 years an editorial writer for *The Iron Age* and for other commercial and technical journals in this country and abroad, died suddenly on Sunday, April 6, of heart failure, at the age of 65 years. Born at Stollhamm, Germany, he became connected with commercial enterprises in the West Indies before his majority, but established himself in business in San Francisco, Cal., in the pioneer days, holding at the same time the office of German Consul there. Returning to the East, he was for 20 years connected as partner with leading houses in the Colonial trade. His extensive travels and his intimate knowledge of commercial affairs were of great service to him in his branch of journalism, which he entered in 1873. An accomplished linguist, a close observer of the course of commercial development and an untiring worker, he was eminent in his chosen profession. An earnest, honest man, his many noble qualities endeared him to all who knew him, and his fortitude and cheerfulness in bearing, for more than ten years, painful ailments increased their admiration and respect.

Relations with China.

Mischief is brewing in Congress touching the relations of the Government of the United States to the great Empire of China. A bill concerning the enumeration of the Chinese population in this country, now under discussion, must exasperate and still further alienate a great nation in the Orient with whom we are at peace, and most inopportunely, if our trade interests in that part of the world are worth possessing or retaining. The Chinese Government has been slow to resent the Exclusion act of a former Congress. Since the Burlingame treaty up to a recent date, the relations of the two countries have been on a most cordial basis. In repeated instances Americans have been treated with marked partiality, most noticeably so since the critical period known as the Tae-ping Rebellion, when the American generals, Ward and Burgovene, received high appointments in conducting military operations, rendering in return signal service. The same friendly disposition was shown not long ago when the Chinese merchant marine was exposed to capture by a hostile force and a large tonnage was transferred to the American flag as the most natural protector. It should also be noticed that so far from cherishing resentment on account of gross outrages inflicted upon Chinese subjects on the Pacific Coast the Imperial Government, with a delicate sense of honor, promptly returned an unclaimed excess of indemnity remaining in the public treasury. Despite this very creditable record, which might well put to shame the claims for a higher civilization which Americans are supposed to assert, we now witness in Congress a disposition to adopt the usages of semi-barbarous nations and erect walls of exclusion of which scarcely a vestige remains even in the "Hermit Kingdom."

The Chinese Enumeration act, now under discussion at Washington, was characterized in fitting terms by Mr. Eustis in the House, when he said: "The bill provides penal statutes with reference to a class of people residing in the United States by reason of the treaty rights. It subjects them to peculiar degradation. It gives just cause of complaint to a foreign government, a government considered to be within the family of nations, a civilized government with which the Government of the United States has solemn treaties, and to a nation with which the American people has important and valuable commercial relations." * * * The Census Committee had bowed down to the House in reporting what he regarded as the most outrageous bill ever sent to the Senate. The trade with China was exceedingly important, and the United States were brought in competition with Germany and England for that trade. The Chinese Government was engaged in vast public works, for the contracts for which there was much competition, and there was no

necessity why that Government and people shsuld be insulted, affronted and degraded by such a measure.

There is reason to apprehend severe acts of retaliation on the part of the Chinese Government, though long delayed. A summary expulsion from the Empire of all Americans, irrespective of their rank and vocation, which, report says, is by no means improbable, would inflict irreparable injury and not unlikely lead to serious international complications. Such an unfortunate turn in events is all the more to be deplored from the circumstance that under the enlightened lead of the eminent statesman and diplomatist Li Hung-Chang, who succeeds to the recent Imperial *régime* and may almost be looked upon as introducing a new dynasty, the Empire is expected rapidly to advance to a front rank among commercial nations. China already has a powerful navy. The first step in railway construction has been taken, giving promise of a wide extension; mines are being opened, likewise in defiance of ancient prejudices which now seem to be breaking down; cotton mills are being built, in accordance with the recommendations of the Governor of Canton, accompanied with large orders for machinery from England, the same to be under the supervision of the central authority, and on every hand are witnessed signs of an awakening from the torper of ages. England is prompt to discern her opportunity and is giving all diligence to establish herself in the confidence of the populous and powerful nation, whose good-will Americans so contemptuously spurn. She has learned that "Peace hath her victories" far more remunerative, and evincing a higher order of statemanship and a keener sagacity than any which she might achieve by force of arms. Alas that Congressmen in Washington should fail to discern the signs of the times, which possibly have a deeper significance, at least in the estimation of the commercial world, than the votes of hoodlums of the Pacific Slope!

A trial of the new Bender propeller wheels was made at Newark, the 3d inst., on the 30-foot naphtha launch Advance, owned by the American Marine and Canal Propeller Company. The boat has four-bladed paddle wheels, situated in drums at each side of the keel, and the buckets or blades extend only slightly beyond the hull. They are 4 x 12 inches, and the drums in which they revolve are only 18 inches in diameter. Yet these diminutive paddles propelled the boat against wind and tide over a mile course in six minutes and seven seconds. The boat ran at a rate of over nine miles an hour with scarcely any swell or disturbance of the water. The wheels revolved at the rate of 250 turns a minute and were operated by independent engines. When one wheel was run forward and the other backward the boat was turned on its own center.

In our issue of March 27 last we inadvertently stated that the price of Connellsville coke to furnace operators was $1.75 per ton. This was an error, as the price has been $2.15 for some time. Foundry coke remains at $2.45 and crushed coke $2.65, all per ton of 2000 pounds, f.o.b. cars at ovens. The demand for coke is reported fair, with good prospects of an increased demand in the near future.

CORRESPONDENCE.

The Life of American Patents as Affected by the Lapse of Foreign Patents.

To the Editor: In January, 1889, the United States Supreme Court rendered an opinion in the case of the Bate Refrigerating Company *vs.* Hammond, involving the question of limitation of the term of a United States patent by a previously granted foreign patent for the same invention. That opinion was understood by the profession, and has been construed by two Circuit Courts to mean that the lapse of a foreign patent, through failure to pay the taxes thereon, under the foreign law, would cause the lapse also of a subsequently granted American patent for the same invention.

To the surprise, but probably also to the satisfaction of all interested in patent matters, this view has been reversed by an opinion rendered March 24, 1890, by the Supreme Court in the case of Pohl *vs.* The Anchor Brewing Company, and it is now in effect decided that failure to pay taxes on a foreign patent does not affect the term of the subsequently granted American patent for the same invention.

Mr. Justice Blatchford delivered the opinion of the court. Yours truly,

HOWSON & HOWSON.

NEW YORK, April 2, 1890.

The following is the opinion referred to by our correspondents.

SUPREME COURT OF THE UNITED STATES.

No. 1269.—*October Term*, 1889.

CARL POHL AND CHARLES ZOLLER, *Appellants.* vs. THE ANCHOR BREWING COMPANY.	Appeal from the Circuit Court of the United States for the Southern District of New York.

(*March* 24, 1890.)

The United States patent in the present case, granted March 18, 1879, was granted for an invention which had been patented previously, in September, 1887, in Germany and in France. It must be, therefore, by the terms of section 4887, so limited as to expire at the same time with that one of the two patents, German and French, "having the shortest term." The German patent on its face appears to have been granted for a term extending from September 6, 1877, to December 12, 1891; and the French patent for a term extending for 15 years from September 3, 1877—that is, until September 3, 1892. If the United States patent does not expire until the end of the term expressed on the face of that one of the two patents, German and French, which has the shortest term so expressed on its face, it does not expire until the end of the term so expressed on the face of the German patent—namely, December 12, 1891; and so it had not expired when this suit was commenced, and has not yet expired. On the other hand, if it expired when the German patent became forfeited by reason of the facts alleged in the plea in regard to it (failure to pay taxes in 1880, and failure to work), or when the French patent became forfeited by reason of the facts alleged in the plea in regard to it, the United States patent expired prior to the commencement of this suit.

The opinion of the Circuit Court in the present case (39 Fed. Rep. 782) proceeded upon the view that the "term" of the foreign patent, referred to in Section 4881, was not the original term expressed in it, but its period of actual existence, and that the United States patent expired when the foreign patent having the shortest term was terminated by its lapsing or becoming forfeited in consequence of the failure of the patentee to comply with the requirements of the foreign patent law. The Circuit Court regarded the decision of this court in Bate Refrigerating Company *vs.* Hammond (129 U. S. 151), made in January, 1889, as requiring such decision.

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Prior to the decision of the Circuit Court in the present case, and in May, 1889, in Huber *vs.* N. O. Nelson Mfg. Company (38 Fed. Rep. 839), in the Circuit Court for the Eastern District of Missouri, before Judge Thayer, it was held that a United States patent, granted after an English patent for the same invention had lapsed and become void by reason of the non-payment of a stamp duty, was granted without authority of law. This decision was made on the interpretation which the court gave the case of Bate Refrigerating Company *vs.* Hammond.

But we think that the question involved in the present case is not the same as that decided in Bate Refrigerating Company *vs.* Hammond, and is not controlled by the decision in that case. There a United States patent was granted in November, 1877, for 17 years. A patent for the same invention had been granted in Canada to the same patentee for five years from January, 1877. The Canadian patent was, in December, 1881, extended for five years from January, 1882, and also for five years from January, 1887, under a Canadian statute passed in 1872. The question involved was whether, under Section 4887, the United States patent expired in January, 1882, or in January, 1892. This court, limiting itself to the precise question involved, said that it was "of opinion that, in the present case, where the Canadian statute under which the extensions of the Canadian patent was granted, was in force when the United States patent was issued, and also when that patent was applied for, and where, by the Canadian statute, the extension of the patent for Canada was a matter entirely of right at the option of the patentee on his payment of a required fee, and where the 15 years' term of the Canadian patent has been continuous and without interruption, the United States patent does not expire before the end of the 15 years' duration of the Canadian patent." This was said on the view, expressed elsewhere in the opinion, that the Canadian patent did not expire, and it never could have been said properly that it would expire before January, 1892. The ground of this conclusion was, that the "term" of the Canadian patent granted in January, 1877, was by the Canadian statute at all times a term of 15 years' duration, made continuous and uninterrupted by the action of the patentee, as a matter entirely of right at his own option.

By parity of reasoning, as applied to the present case, Section 4887 requires that the United States patent shall be so limited as to expire at the same time with the term limited by the foreign patent issued prior to the issuing of the United States patent, having then the shortest time to run. There is nothing in the statute which admits of the view that the duration of the United States patent is to be limited by anything but the duration of the legal term of the foreign patent in force at the time of the issuing of the United States patent, or that it is to be limited by any lapsing or forfeiture of any portion of the term of such foreign patent, by means of the operation of a condition subsequent, according to the foreign statute. In saying that "every patent granted for an invention which has been previously patented in a foreign country shall be so limited as to expire at the same time with the foreign patent," the statute manifestly assumes that the patent previously granted in a foreign country is one granted for a definite term, and its meaning is that the United States patent shall be so limited as to expire at the same time with such term of the foreign patent. Such term was held in Bate Refrigerating Company *vs.* Hammond to be 15 years and not five years.

This view is made conclusive by the requirement of Section 4887, that if there be more than one prior foreign patent, the United States patent shall be so limited as to expire at the same time with that one of such foreign patents "having the shortest term." This means the foreign patent which, at the time the United States patent is granted, has then the shortest term to run, irrespective of the fact that the foreign patent may afterward lapse or become forfeited by the non-observance of a condition subsequent prescribed by the foreign statute.

In the view that Section 4887 is to be read as if it said that the United States patent is to be so limited as to expire at the same time with the expiration of the term of the foreign patent, or if there be more than one, at the same time with the expiration of the term of the one having the shortest term, the interpretation we have given to it is in harmony with the interpretation of the words "expiration of term" in analogous cases. (Oakley *vs.* Schoonmaker, 15 Wendell, 226; Beach *vs.* Nixon, 9 N. Y., 35; Farnum *vs.* Platt, 8 Pick. 338). In those cases it was held that the words "expiration of term" do not mean expiration of term through a forfeiture by breach of a condition, but mean expiration by lapse of time.

The decree of the Circuit Court is reversed.

The Board of Managers of the New York Metal Exchange met on the 3d inst. to consider the plan proposed by the president, Mr. Tallmadge Delafield, for increasing the interest of the metal trade in the exchange. Nothing positive was done, however, and the board adjourned to meet in about two weeks.

Pig Production Decreased.

During March the changes in plants working, taken as a whole, alter but little the rate of production with which we entered upon the preceding month. In some sections there has been a slight falling off, in others a gain. So far as developments have gone this month, however, they point to an increase, unless a number of stacks now running blow out. Both in the North and in the South furnaces which have been under preparation or under construction are about to become producers, so that the outlook from the standpoint of the maker is far from encouraging. Any concerted movement to reduce current production seems entirely out of the question, and stern necessity only will drive some of the weaker out of the ranks.

As compared with previous months the record stands as follows:

	Furnaces in blast.	Capacity per week.
April 1	341	175,701
March 1	343	180,991
February 1	334	173,651
January 1	333	174,038
December 1	328	169,151
November 1	323	165,225
October 1	311	151,057
September 1	294	134,068
August 1	286	145,899
July 1	285	141,419
June 1	286	137,119

The status of the anthracite furnaces was as follows on the 1st inst.:

Anthracite Furnaces, April 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	23	11	3,638	12	2,930
New Jersey	14	7	3,207	7	2,465
Spiegel	3	3	236	0	0
Pennsylvania:					
Lehigh Valley	45	36	13,080	9	2,380
Spiegel	2	2	265	0	0
Schuylkill Valley	37	19	7,580	18	5,160
U. Susquehanna Valley	18	14	4,442	4	920
Lebanon Valley	16	14	7,232	2	522
L. Susquehanna Valley	16	10	4,954	6	1,465
Spiegel	2	2	650	0	0
Totals	176	118	45,284	58	15,842

For the past 15 months our records show the following:

	Furnaces in blast.	Capacity per week.
April 1	118	45,284
March 1	115	45,790
February 1, 1890	107	43,905
January 1, 1890	105	42,857
December 1	100	40,053
November 1	96	40,603
October 1	94	36,558
September 1	93	35,997
August 1	88	34,277
July 1	89	34,142
June 1	91	34,386
May 1	95	35,315
April 1	102	37,977
March 1	103	37,937
February 1	107	39,187

In New York one of the Poughkeepsie furnaces ceased operations in March, but one of the Onondaga, under new management, is to blow during this month. In New Jersey Secaucus was added to the list of active furnaces in March, and Wharton has since started. The Passaic spiegel furnace blew in last month. One of the Coplay furnaces in the Lehigh Valley started in March. The stopping of No. 2 Hokendauqua of the Thomas Iron Company was overbalanced nearly by the resumption of the second Saucon. Bethlehem has been running one of its furnaces on spiegeleisen. In the Schuylkill Valley Keystone No. 2 was started since the 1st of April, and Temple is about to follow suit. In the Upper Susquehanna, the Lower Susquehanna and the Lebanon Valleys there have been no changes of any significance.

The following is a summary of current capacity of coke furnaces:

Coke Furnaces, April 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	4	3	3,030	1	1,210
Pennsylvania:					
Pittsburgh district	21	18	22,097	3	3,107
Spiegel	1	1	672	0	0
Shenango Valley	19	16	11,766	3	1,856
Juniata and Conemaugh valleys	17	13	6,521	4	2,010
Spiegel	1	0	0	1	500
Youghi. Valley	5	4	2,291	1	173
Miscellaneous	4	4	2,259	0	0
Maryland	5	3	3,810	2	3,640
West Virginia	6	4	2,332	2	620
Ohio:					
Mahoning Valley	15	12	9,837	3	2,650
Central and Northern	18	13	10,438	5	4,382
Hocking Valley	15	6	1,866	9	1,810
Hanging Rock	14	8	1,930	6	810
Indiana	2	2	470	0	0
Illinois	12	9	10,600	3	2,810
Spiegel	1	1	670	0	0
Wisconsin	4	4	2,600	0	0
Missouri	6	1	495	5	1,790
Colorado	2	1	550	1	475
The South:					
Virginia	13	12	5,459	1	720
Kentucky	4	3	939	1	310
Alabama	32	24	14,309	8	4,150
Tennessee	11	8	4,118	3	1,450
Georgia	2	1	560	1	330
Totals	234	171	119,613	63	34,205

As compared with the 15 previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
April 1	171	119,613
March 1	169	122,595
February 1	169	118,368
January 1, 1890	169	119,396
December 1	162	116,319
November 1	160	112,260
October 1	154	102,454
September 1	141	96,744
August 1	137	96,720
July 1	136	96,584
June 1	135	91,771
May 1	147	98,399
April 1	151	100,060
March 1	150	100,757
February 1	150	98,518

In New York the third Troy furnace has been blown in lately, but did not figure among the capacity at work on April 1.

There are no changes whatever to report among the stocks of the Shenango, Youghiogheny or Juniata Valleys, or among the furnaces which we group under miscellaneous.

In Maryland the Pennsylvania Steel Company has blown in the second of its magnificent new plant of four furnaces. In West Virginia, Riverside, at Wheeling, after thorough remodeling, has blown in during March, thus adding another stack of large capacity to the plants producing. Irondale, in the same State, ran slowly on account of an accident to the machinery.

In the Mahoning Valley, Ohio, Hubbard No. 1 stopped on the 3d ultimo for repairs, after having made 126,377 tons of pig iron during the blast then ended. The furnace will probably resume in May. Phœnix ran during the greater part of March, after completing repairs. Among the furnaces grouped as in Central and Northern Ohio, Bellaire is out of blast.

In Missouri the furnace of the St. Louis Ore and Steel Company is out of blast.

In the South, one of the Crozer furnaces in Virginia was banked during a part of March. In Alabama no changes of any consequence have taken place. One of the new De Bardeleben furnaces has started, however, and another one is to follow soon. In Tennessee, Nashville is idle, while in Georgia, Rising Fawn has blown in.

The charcoal furnaces show the following:

Charcoal Furnaces, April 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England	14	7	590	7	530
New York	8	3	360	5	523
Pennsylvania	16	3	254	13	809
Maryland	6	3	340	3	280
Virginia	18	0	0	18	900
Ohio	11	3	186	8	454
Kentucky	2	0	0	2	196
North Carolina	2	1	70	1	70
Tennessee	10	5	693	5	570
Georgia	2	2	480	0	0
Alabama	14	10	2,081	4	820
Michigan	24	11	3,165	13	4,050
Missouri	2	2	622	0	0
Wisconsin	6	4	1,830	2	420
Texas	1	1	173	0	0
California	1	0	0	1	120
Washington	1	0	0	1	193
Oregon	1	0	0	1	190
Total	136	52	10,804	84	10,805

As compared with previous months the year began as follows:

	Furnaces in blast.	Capacity per week.
April 1	52	10,804
March 1	59	12,606
February 1	58	11,378
January 1, 1890	59	11,485
December 1	66	12,779
November 1	67	12,293
October 1	63	12,047
September 1	60	11,327
August 1	61	11,902
July 1	60	10,727
June 1	60	10,962
May 1	54	10,629
April 1	53	10,173
March 1	55	11,081
Feb. 1	62	11,219

In Pennsylvania, Hecla was banked on the 1st instant, and South Side blew out on the 29th. In Kentucky, Bellefonte is out repairing and accumulating a stock of charcoal. In Ohio, Mount Vernon went out on the 13th ultimo, to put in a new hot-blast. Olive has started, after remodeling. Madison is repairing, and Bloom and Scioto are getting ready to blow early in May. Elk Rapids, in Michigan, was banked on the 29th ultimo, until a supply of new ore can be obtained, which will probably be in three weeks. The Southern Iron Company have banked their La Grange and their No. 2 Warner, in Tennessee, and the Attalla, in Alabama; Tecumseh, too, was banked. In Texas, the Old Alcalde started in the second week in March.

Stock reports show that 41 anthracite furnaces, active, with the exception of two, having a capacity of 14,253 tons weekly, carried a stock 36,211 tons, which does not indicate any notable increase; the figures for 40 furnaces on March 1, with a capacity of 12,918 tons, being 38,493 tons. Furnaces to the number of 89, running on coke, with a capacity of 55,663 tons weekly, were carrying 146,170 tons. This indicates an increase, the larger figures coming from nearly every producing section, and notably so from the South. Thus plants in Alabama and Tennessee, representing 19 active furnaces, which produced in February (28 days), 41,309 tons, and in March (31 days), 47,732 tons, carried on the 1st of March 36,212 tons, which had risen to 50,949 tons on the 1st of April.

Henry B. Slover, who was a large contractor on the Panama Canal, has sailed for Egypt and is supposed to have some connection with the scheme for cutting a canal from the Red Sea and flooding some portion of the Desert of Sahara.

The Hansa Steamship Company, of Hamburg, have ordered five large vessels to be built at English shipbuilding yards, to meet the growing demands of their trade.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., April 8, 1890.

Ex-Speaker Carlisle, who has been suffering for some days from a severe cold, is devoting all the energy at his command to the preparation of the minority report on the new Tariff bill. His friends have been urging him to turn the difficult task over to the other minority members of the committee, but he insists upon doing the work assigned to him. Mr. Carlisle says that he will have the report completed in time to lay before the general committee on Thursday, when it is proposed to submit the majority report. It will then be determined when both documents and the bill shall be laid before the House. The conflicting opinions among Representatives and others upon certain features of the majority measure are becoming more reconciled. The New England interests affected by the committee action on hides have been making considerable stir, and it is not improbable that they will make some opposition in committee of the whole, but whether they will vote against the committees' bill remains to be seen.

The Democrats at an informal conference decided not to co-operate with dissatisfied Republicans in modifying or amending certain provisions of the bill, but determined to act upon their own line. Therefore, if any Republicans wish to co-operate with them they can do so in support of the Democratic substitute to accomplish their purposes. The minority report will be a reiteration of the position taken by the Democratic majority on the Mills' bill. They think that the renewal of this controversy in a House controlled by the Republicans will present this issue in a more satisfactory shape than when they were in the majority.

There is a disposition on both sides to begin the discussion in Committee of the Whole as soon as possible. The country will then be treated to the old lines of argument which have been prosecuted with almost biennial periodicity for years. There is every indication of a very stubborn contest over the control of the next House, and the fight will be more distinctively on the issue between parties favoring tariff reform on the one side and tariff revision on the other than has characterized the Congressional elections for many campaigns.

In the Senate Committee on Finance the House bill has been informally examined and meets with very general favor. It was intimated by a member of the majority that there are no points in the bill which do not meet with the concurrence of the majority, although there may be some matters of detail which will be added. The declining health of Senator Beck will eliminate from the debate in the Senate one of the most fearless and determined champions of the Democratic side of the tariff question.

There is every prospect of a protracted discussion in the House, as almost every Representative is anxious to say something on the subject. It is evident that the industrial interests and the country will have not only passed through a Congressional campaign this year fought on tariff issues, but that the Presidential contest of 1892 will repeat the tariff fight of 1888. Chairman McKinley said to-day that he would ask to begin the tariff debate in Committee of the Whole House about the middle of the present month.

The Nicaragua Canal Construction Company have signed a contract for dredging the harbor and bar at Greytown to a depth of 20 feet, for the purpose of opening the harbor for vessels carrying machinery and plant for the canal work. The construction of the pier at Greytown, already 600 feet long, is progressing favorably.

OBITUARY.

EDWARD GREGG.

Edward Gregg, senior member of the firm of Logan, Gregg & Co., hardware merchants at Pittsburgh, Pa., died at his residence in Allegheny City, Pa., on the night of the 4th inst. His ailment was not considered dangerous, and his death was a great surprise and shock to his many friends. The deceased was a native of Pennsylvania and went to Pittsburgh when quite young, after having graduated at Washington and Jefferson Colleges, and immediately entered the hardware store of the firm which bore his name, and remained with it until his death. Mr. Gregg amassed a large fortune and was a self-made man in the strictest sense. He leaves a wife and family of grown-up children.

MARSHAL W. CARTER.

Marshal W. Carter, a civil engineer, who some years ago had charge of important operations on the Erie Canal and other public works in the State, died suddenly in Chicago a few days ago, aged 65 years.

B. ANDREW KNIGHT.

B. Andrew Knight, president of the Huntingdon and Broad Top Mountain Coal Company, died suddenly at his residence in Philadelphia, aged 66 years. Mr. Knight was for a number of years president of the Susquehanna and Tidewater Canal Company.

H. D. CAMPBELL.

H. D. Campbell, secretary and treasurer of the Pittsburgh and Western Railroad, died at his residence in Allegheny City, Pa., on the afternoon of the 5th inst., of typhoid fever. He was 39 years of age and leaves a wife and two daughters. He was a brother of Rev. W. A. Campbell, of Sewickley, Pa., and J. T. Campbell, a merchant, of Franklin, Pa.

WILLIAM GALLOWAY

William Galloway, the oldest locomotive engineer in the world, died in Baltimore, 7th inst., of appoplexy, in the eighty-second year of his age. He had been in the employ of the Baltimore and Ohio Railroad 54 years, and only two years ago was retired on a pension. He never missed a trip, with the exception of four times, when something went wrong with the engine.

The Illinois Steel Company.

The changes in the management of the Illinois Steel Company, which followed the retirement on the 1st inst. of O. W. Potter and E. C. Potter, are not numerous. O. W. Potter resigned the chairmanship of the Executive Committee, but will retain his membership in the Board of Directors and will continue to occupy an office in the company's suite in the Rookery Building. His withdrawal from the prominent position which he held will relieve him from the necessity of regular attendance to the affairs of the company, and thus give him a long-desired opportunity for rest and recuperation. His successor as chairman of the Executive Committee is A. J. Forbes-Leith. E. C. Potter resigned his position as second vice-president and also his membership on the Board of Directors. H. S. Smith, superintendent of the Joliet works, succeeds him as a director and member of the Executive Committee. Mr. Smith was one of the directors of the Joliet Steel Company at the time of the consolidation of the three companies. The second vice-presidency has been left vacant, and the probabilities are in favor of the discontinuance of that office.

The improvements now in progress at the works of this company are being vigorously pushed. At South Chicago the new blast furnaces are well under way and the rail mill is being reconstructed as rapidly as possible. A rumor has gained currency that the rail mill was to be converted into a plate mill and the manufacture of rails abandoned at that point. This is incorrect. The plant will not only continue to make rails, but the company hope to have in it the finest rail mill in the world. The changes now being made are so extensive that two months or more will elapse before it is put in operation. Ground has not yet been broken for the plate mill, as the officers of the company concluded that it would be better to wait until the other work of construction on hand was at least partly out of the way. The plate plant will, however, be built at South Chicago, and is to be a wholly new enterprise. At the North Chicago works only the blast furnaces are at present in operation. A fitting shop of the most improved character is being added to these works to finish beams and other building material, so that when the mill resumes operations it will be prepared to meet all the requirements of the building trade. At the Joliet works the new blast furnace is about completed and the construction of the new rod mill has been commenced.

Pig Iron Freights.

On pig iron for the West, the Southern Railway and Steamship Association have issued Tariff No. 10 to take effect on April 16. To the leading points the figures are as follows :

To	From					
	Birmingham, Ala.	Chattanooga, Tenn.	Sheffield and Florence, Ala.	Almiston, Ala.	Cedartown, Ga.	Rising Fawn, Ga.
Akron, Ohio.....	$4.10	$3.60	$3.85	$4.10	$4.10	$3.85
Atchison, Kan...	5.14	5.14	4.69	5 14	5.64	5.14
Chicago, Ill.	4.10	3.85	3 85	4.35	4.35	4.10
Cincinnati, Ohio.	2.85	2.35	2.60	2.85	2.85	2.60
Cleveland, Ohio..	4.10	3.60	3.85	4.10	4.10	3.85
Columbus, Ohio..	3.60	3.10	3 35	3.60	3 60	3.35
Detroit, Mich ...	4.10	3.85	3 85	4.35	4.35	4.10
E. St. Louis, Ill..	3.35	3 10	2.90	3.35	3.60	3.35
Fort Wayne, Ind	3.85	3.60	3.60	4.10	4.10	3.85
Kansas City, Mo.	8.14	5.14	4.69	5.14	5.64	5.14
Louisville, Ky...	2.60	2.35	2.35	2.85	2.85	2.60
Memphis, Tenn..	2.10	2.10	1.65	2.10	2.60	2.19
Milwaukee, Wis.	4.50	4.25	4.25	4 75	4.75	4.50
Omaha, Neb.....	5.14	5.14	4.69	5.14	5.64	5.14
Pittsburgh, Pa..	4.50	4.00	4.25	4 50	4.50	4.25
Springfield, Ill...	4.10	3.85	3.85	4.35	4.35	4.10
Steubenville, O..	4.50	4.00	4 25	4.50	4.50	4.25
St. Louis, Mo.....	3.35	3.10	2 90	3.35	3.85	3.60
Terre Haute, Ind	3.60	3.35	2.35	3.85	3.85	3.60
Toledo, Ohio... .	4.10	3.60	3.85	4.10	4.10	3.85
Wheeling, W. Va.	4.50	4.00	4.25	4.50	4.50	4.25

The rates are on carload lots of not less than 17½ tons of 2268 pounds.

An important reduction of freight rates on iron was granted by the Central Traffic Association, at Chicago, who passed the following resolution : "*Resolved*, That rates on iron and iron articles, as per revised list, be made on the basis of sixth class in carloads and fifth class in less lots, to take effect on April 17, and apply between all points in the Central Traffic Association territory ; these rates to remain in effect until September 1 next." The reduction is one class in each case, amounting to about 15 per cent. in rates, and applies on all iron articles.

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St. }
PHILADELPHIA, Pa., April 8, 1890. }

Pig Iron.—The market shows a little more activity, but prices are a trifle lower than they were a week ago. The continuous pressure to realize on outside lots has had its effect on local brands, until at last a general marking down has been made, from which it seems likely that no further concessions will be submitted to, unless very unlooked-for contingencies arise. Buyers are still taking none but small lots, and to effect a large sale more or less reductions need to be made before the transaction can be closed. This, however, refers more particularly to outside lots, as other descriptions are pretty well sold up and a moderate continuance of small orders will be sufficient to prevent accumulations, and, besides that, there is no disposition to enter much business ahead at rates now attainable. It is difficult to give exact quotations, but $18.75 @ $19.50, delivered, may be considered the range for good to choice No. 1 Foundry, $17.50 @ $17.75 for No. 2 and $16.50 @ $17 for Gray Forge. Southern brands are offered at $18 @ $18.50 for No. 1 and $16 for Gray Forge, with bids for round lots at from 50¢ to $1, according to delivery. It is stated that offers of good Southern Irons have been declined at $15.50, delivered, but sellers claim that they have refused offers at that figure and are not much disposed to shade $16. But the market is evidently a waiting one, and a very little thing would cause either side to run. That is, a stiffening at other points would cause buyers to close their options, or indications of further weakness would determine sellers to accept such bids as they could fall back upon. The general outlook is for a better demand, in which case fears of further decline may be safely dismissed.

Bessemer Pig.—No business of importance has been reported of late. Furnaces are pushed for deliveries on old contracts, so that there is no urgency for new business, although $20 @ $20.50 would probably be accepted for desirable orders.

Spiegeleisen.—Prices are easier, with sellers at $34 @ $34.50, duty paid, for 20 %. There is no inquiry of any importance, but consumers say at about $1 less they might be inclined to talk business, but there is no urgency on either side.

Ferromanganese.—The demand is not important, and prices are somewhat lower, say, $82.50 @ $85, duty paid, for 80 %, price according to delivery. A few small lots were sold at $85 @ $86 for prompt shipment, but summer shipments are offered at $82.50.

Steel Rails.—The market remains in a somewhat unsatisfactory condition, although prices are fairly maintained at about $34, at mill. Some of the large orders talked about a short time ago are held in abeyance, as the parties still hope for lower prices. As a matter of fact, several leading roads are taking just such lots as they need from month to month rather than place a full order at quoted rates. Practically it makes very little difference to manufacturers whether it is one order of 10,000 tons or five orders of 2000, as requirements will in either case be about the same. The decline in Billets affects prices of Rails to some extent, but as already stated $34, at mill, seems to be an inside quotation.

Billets, Slabs, &c.—Demand slow and prices very irregular. As low as $30, delivered, has been mentioned, and from that up to $31 @ $31.50. Prompt specifications would probably be accepted at the inside figure, but for deferred deliveries prices are quoted at $1 @ $2 more money.

Blooms.—Prices about $52 @ $53 "per Bloom ton" for Hot-Blast Charcoal, and $54 @ $55, delivered, for Cold-Blast; Runout Anthracite, $44 @ $45, and Scrap Blooms, $35 @ $36, delivered in consumers' yards.

Muck Bars.—Prices have not improved during the past week. The demand is very small, and as sellers are anxious to realize it is hard to get bids at over $28.50, at mill. The usual asking price is $29 @ $29.50, but it has been found almost impossible to do business at those prices, so that quotations are almost nominal.

Bar Iron.—A better demand is reported, and a good deal of business has been entered for the car builders, but at low prices. In a general way quotations are pretty well maintained at about 1.90¢ @ 1.95¢ for the ordinary run of business, but in case of a large order concessions of from a half-tenth to a tenth are unavoidable. It is understood that Car Iron has been delivered at 1.80¢ @ 1.85¢, but without full details as to specifications and requirements as to quality quctations are not entirely trustworthy as an indication of the exact condition of the market. Still there is no doubt that business has been done at the figures named within the past few days, and until the mills become more fully employed further orders would be accepted on similar terms.

Skelp Iron.—A few small orders have been given out, but there is nothing of importance going on. Prices are nominally 1.85¢ @ 1.90¢, delivered, for Grooved, and 2¢ @ 2.10¢ for Sheared, but the market is irregular and unsettled.

Plates.—More business has been offered than for some time past, and a fair amount has been taken, but at very unsatisfactory prices. Manufacturers are talking a little firmer, but the desire for new business is so great and competition is so sharp that as yet prices are at the lowest for several months past. Prospects are said to be favorable for a better demand, but until that is realized it is useless to talk about much improvement in prices. Quotations to-day are about as follows:

	Iron.	Steel.
Heavy Plates	2.10 @ 2.15¢	2.40 @ 2.45¢
Tank	2.20 @ 2.25¢	2.50 @ 2.60¢
Bridge Plate	2.20 @ 2.25¢	2.50 @ 2.55¢
Shell	2.40 @ 2.50¢	2.80 @ 3.00¢
Flange	3.10 @ 3.25¢	3.00 @ 3.15¢
Fire-Box	3.75¢	3.75 @ 4.25¢

Structural Material.—Business is not as active as could be desired, but mills are still fairly employed on old contracts. The outlook is fairly encouraging, although competition is becoming very close on desirable business, and prices are somewhat irregular at about the following figures, delivered: 2.25¢ @ 2.30¢, delivered, for Universal Plates; 2.20¢ @ 2.25¢ for Iron Bridge Plate; 2.20¢ @ 2.25¢ for Angles, with 15¢ @ 20¢ more for the same in Steel. Tees, 2.7¢ @ 2.8¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—The demand keeps up satisfactorily, and mills have about all the work they can get through with without accumulating stock. Prices for carload lots of the best makes remain at about the following figures:

Best Refined, Nos. 14 to 20	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24	3.20¢ @ 3.30¢
Best Refined, Nos. 25 to 26	3.40¢ @ 3.50¢
Best Refined, No. 27	3.50¢ @ 3.60¢
Best Refined No. 28	3.60¢ @ 3.70¢
Common, ¼¢ less than the above.	
Best Soft Steel, Nos. 14 to 20	3¼¢
Best Soft Steel, Nos. 21 to 24	3¾¢
Best Soft Steel, Nos. 25 to 26	3⅞¢
Best Soft Steel, No. 27	4⅛¢
Best Bloom Sheets, 1-10¢ extra over the above prices.	
Best Bloom, Galvanized, discount	60 %
Common, discount	62½ %

Old Rails.—No business whatever in this market. A lot of 1000 tons to arrive was offered, but without obtaing a bid, so that prices are entirely nominal at from $24 to $25 for such small lots as parties happen to want, but on a large lot buyers say $23 would be a full price.

Scrap Iron.—Prices are entirely nominal, and are therefore merely asking figures. In case of sales to realize at once concessions of 50¢ or $1 might be required, but there is no reliable market at at present. The following quotations are as near as can be given: No. 1 Wrought, $22.50 @ $23.50 Philadelphia, or for deliveries at mills in the interior $23 @ $24; $16 @ $17 for best Machinery Scrap, $15 @ $15.50 for ordinary, $16.50 @ $17 for Wrought Turnings, $11 @ $11.50 for Cast Borings, and $26 @ $28 for Old Fish-Plates, and $18 @ $19 for Old Car-Wheels.

Wrought-Iron Pipe.—The demand is about fair, with nothing to indicate any important change in the immediate future. Discounts as follows: Butt-Welded Black, 47½ %; Butt-Welded Galvanized, 40 %; Lap-Welded Galvanized, 47½ %; Lap-Welded Black, 60 %; Boiler Tubes, 1¼ inches and smaller, 45 %; Boiler Tubes, 2 to 4 inches, 50 %; Boiler Tubes, 4½ inches and larger, 52½ %; Oil Well Casing, 50 %.

Nails.—The demand is somewhat better, but prices are as irregular and unsettled as ever. Carload lots are held at $1.95 @ $2, but under forced sales still lower figures have been accepted for some brands. Small lots from store are still quoted at $2.20.

Chicago.

Office of *The Iron Age*, 59 Dearborn street, }
CHICAGO, April 9, 1890. }

(*By Telegraph.*)

The local business situation has, of course, not been improved by the strike epidemic, which has broken out with some virulence. Last week the plumbers laid down their tools all over the city, and this week the carpenters have joined them in striking. There was every indication of an amicable settlement of the carpenters' troubles up to Saturday night, but they claimed more than their employers were willing to concede and a strike was inaugurated on Monday. Other branches of the building trades are affected, and the prospects are very unfavorable for all business depending on activity in building. Hopes are entertained of an early settlement, but there is danger that the labor trouble may last for a long time.

Pig Iron.—All Pig Iron dealers report an increased inquiry and greater activity. The demand for small lots is urgent and buyers want immediate shipments, showing that they have no stocks. Heavy consumers are generally holding off, yet some large sales have been made both of Coke and Charcoal Iron. In a few cases the sales made are for long-time deliveries, but some of the lowest Southern sellers are quoting only for three months ahead. Prices have been made which are said to net the Southern companies but $11 at the furnace. Such prices must certainly lead to an early curtailment of production. It would seem that buyers are fortunate who can get in at these rates. The Southern sellers have not had their own way in everything the past week. Northern Coke furnaces have captured some of the heavy orders alluded to. They make low prices to do this, but claim that it was not necessary to go to the extreme limit. Quotations are changed as follows, for cash: Lake Superior Charcoal, $21 @ $21.50; Local Coke Foundry, No. 2, $16.50 @ $17; No. 3, $16 @ $16.50.

Bar Iron.—Is still weak. Car builders have placed some orders during the week, but otherwise the market was dull. Car specifications quote at 1.70¢ @ 1.72½¢, flat. Ordinary specifications quote at 1.75¢.

Structural Iron.—The demand runs largely to Beams, which are selling very freely at regular price. Angles sell in small quantities at 2.60¢ and Tees at 3¢ @ 3.10¢.

Plates, Tubes, &c.—Plate mills are pushing anxiously for business, especially on heavy Iron Sheets, and name prices which are evidently not far from bed rock. Carload lots of Tank Iron are now quoted at 2.50¢; Tank Steel, 2.65¢; Iron Sheets, 2.55¢; Steel Sheets, 2.80¢. Jobbers report a very steady business, orders being small but constantly coming in. The Tube market is again stronger; consumers are buying freely and mills sticking closer to quotations. Store prices are changed as follows: Iron Sheets, 2.80¢; Tank Steel, 2.75¢; Flange Steel, 3.40¢.

Sheet Iron.—Black Sheet Iron continues quiet, with best makes No. 27 quoted at 3¢ @ to 3.10¢, at mill, and inferior grades 10¢ less. Small lots, 3.40¢, from stock. Galvanized is not any lower in price, while demand keeps up remarkably well. Usual price for Juniata from stock 62½ % off.

Merchant Steel.—Moves along very evenly both as to price and demand. Mill lots are quoted as follows, Chicago: Toe Calk and Open-Hearth Spring, 2.75¢ @ 2.85¢; Open-Hearth Machinery, 2.65¢ @ 2.90¢; small lots from store Bessemer Bars, 2.30¢ rates; Toe Calk and Spring, 3¢ @ 3.25¢; Open-Hearth Machinery, 2.75¢ @ 3¢; Tool Steel, 7.5¢ and upward; Crucible Sheets, 7¢ @ 10¢. Cold-Rolled Steel Bars, 15 to 20 % off list.

Steel Rails and Fastenings.—Steady at $35 @ $36, according to quantity and time. Orders for considerable quantity placed since last report, and more are in sight, which are expected to be closed soon. Splice Bars have been quiet recently, with quotations unchanged at 1.95¢ @ 2¢ for Iron and 2.10¢ for Soft Steel. Spikes are unsettled, but mills are trying to come together and sustain prices at former basis. Large lots are quoted $2.10, and less than carloads $2.25; Track Bolts unchanged at 2.90¢ @ 2.95¢ Square Nut, and 3¢ @ 3.05¢ Hexagon Nut.

Old Rails and Wheels.—Buyers have paid $23 in interior of State for Old Iron Rails, prompt shipment, but had previously paid $22.50 for future delivery. Chicago consumers have paid $23.25. Old Steel Rails are moving in moderate quantities at $19.50; $20 for short pieces, and $21 for long. Car-Wheels dull and quoted $19 @ $19.25.

Scrap.—Is very quiet and prices are unchanged as follows, net ton: No. 1 Forge, $18.50 @ $18.75; No. 1 Mill, $14.50; No. 2 Mill, $10; Fish Plates, $21; Pipes, $13.50; Axles, $23.75; Machinery, Cast, $13.50; Cast Borings, $9; Wrought Turnings, $13; Stove Plate, $10.50; Mixed Steel, $15; Coil Steel, $17; Leaf Steel, $18; Tires, $20; Horseshoes, $18.50.

Hardware.—The wholesale Hardware trade keeps up very well. The volume of business is not so large as at the corresponding date last year, but jobbers realize that they were favored in February and March with trade, which usually seeks them later, and take the situation philosophically. The demand at present is very general, so far as territorial limits are concerned, and runs largely to seasonable goods. Prices are very steady, except on staple goods, which are cut according to circumstances.

Nails.—Cut Steel Nails are in better demand, and if manufacturers showed a firm front orders would be placed quite freely. Even now some heavy buyers find their stocks too low and are sorting up, but they are moving very cautiously so as to be able to take advantage of any sudden change in the market. Makers generally quote $2, at factory, but this is shaded according to circumstances. Jobbers quote $2.25 @ $2.30, from stock. Wire Nails are also selling more freely, but the same influences prevail here as in Cut Nails. Makers are openly quoting $2.40 @ $2.45, at factory, and soliciting the small trade. Jobbers quote small lots from stock at $2.75 @ $2.80.

Barb Wire.—In Barb Wire competition has latterly been less keen, and makers' prices are held more steadily. While trade is not what it should be at this time of the year, it is improving and strong hopes are entertained of a good business shortly. Jobbers quote Painted at 3.25¢ and Galvanized 3.85¢, but shade these prices when circumstances make it desirable.

Pig Lead.—The market has been almost lifeless; sale of 100 tons reported at 3.75¢. Corroding Lead held at 3.80¢ @ 3.85¢.

Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts.,
CINCINNATI, April 9, 1890.

(By Telegraph.)

Pig Iron.—If all reports are trustworthy, the past week will pass into the history of the iron trade in Cincinnati as marking the time of lowest prices and largest sales ever before known. That this condition is perfectly legitimate, the outcome of natural causes, only the future can determine; that there are skeptics regarding the reports is not surprising; in fact it is difficult to realize such heavy depreciation in Pig Iron which the prices about to be recorded show. From a superficial view there is nothing to warrant such heavy decline. The statistical situation leads to the belief in higher prices rather than otherwise, and that interested parties entertain thoughts of deep schemes or picture large firms in financial embarrassment seems to follow as a natural sequel. But whatever the causes and without attempt to find an explanation, the reports together show sales during the past week aggregating in round figures, 65,000 tons, at a decline of 50¢ to $1 per ton from the prices current a week ago, but it may not be out of place to state that factors placing carloads to several ton orders have found little difficulty in selling at prices 50¢ above quoted prices. The large transactions noted have been for delivery extending from three and four to six months, and in two instances through the entire year. The small sales are largely for prompt shipment or near by delivery. The large sales were on the basis of $14.50 for No. 1, $14 for No. 2, $13.50 for No. 3; Soft Southern Coke Foundry: $13 for Grey Forge and $12.50 for mottled, cars in Cincinnati. It is asserted that in a few instances prices were shaded, notably the sales made in Detroit were reported at $13.25 for No. 3 foundry, and $12.75 for Grey Forge, the purchasers of the iron sold are said to be largely for Detroit, Chicago and St. Louis car works, stove foundries and pipe works, but there were many orders widely distributed.

The Tennessee Company reported sales of between 10,000 and 15,000 tons, of which 2000 tons were mottled, the remainder made up of the grades mentioned. They refused to name the exact prices obtained, but claimed to be asking 50¢ above quoted prices at the close. Matthew, Addy & Co., reported sales aggregating upward of 40,000 tons in lots, and ranging from 1000 to 6000 tons at the prices quoted above, as well as the delivery stated. The Dayton Coal and Iron Company are known to have sold 4000 tons in lots of 2000 and 1000 tons, reported to have been upon the basis named. Rogers, Brown & Co., report sales of between 6000 and 7000 tons. It is believed that the local pipe works have purchased 10,000 tons of Iron during the past week. We quote nominally:

Foundry.	
Southern Coke, No. 1	$14.50 @ $15.00
Southern Coke, No. 2	14.00 @ 14.50
Southern Coke, No. 3	13.50 @ 14.00
Ohio Soft Stone Coal, No. 1	16.50 @ 17.00
Ohio Soft Stone Coal, No. 2	15.50 @ 16.00
Mahoning and Shenango Valley	16.50 @ 17.00
Hanging Rock Charcoal, No. 1	20.00 @ 22.00
Hanging Rock Charcoal, No. 2	18.50 @ 19.00
Tennessee and Alabama Charcoal, No. 1	17.50 @ 18.50
Tennessee and Alabama Charcoal, No. 2	18.00 @ 18.50
Forge.	
Gray Forge	13.00 @ 13.50
Mottled Neutral Coke	12.50 @ 13.00
Car-Wheel and Malleable Irons.	
Southern Car-Wheel	22.50 @ 23.25
Hanging Rock, Cold Blast	21.50 @ 24.25
Lake Superior Car-Wheel and Malleable	22.50 @ 24.25

Detroit.

WILLIAM F. JARVIS & Co., under date of April 7, 1890, say: The general market can be said to have been pretty well unveiled during the past week, and can hardly be satisfactory to the furnaceman, particularly in the South. A number of large deals for Gray Forge and low grades of Southern Irons were made during the past week, and developed a weakness which was not expected, inasmuch as prices showed very nearly as low a level as any figures of 1889 at the worst time. It seemed to be a scramble for business at nearly any figure. The general idea seems to be that the large buying in this and other sections of the country will place values at once upon a better plane, but there can be no hesitation in reporting that the market is very weak at the present time. A somewhat noteworthy fact in the general market is the strength shown in Lake Superior Charcoal Irons, notwithstanding the general depression in other grades. The market for this grade cannot well be on a much lower basis than existing figures. While many furnaces are sold ahead, the outlook for a large tonnage business generally was never better than at present, and it is expected that no lowering of prices for this grade of metal will be seen for some time to come. This is largely due to the fact that little, if any, increase has been made in the production, and the consumption for Car-Wheel and Malleable purposes will be considerably larger than in 1889. The general market is weak, with the exception of Lake Superior Charcoal Iron, and is quotable today as follows:

Lake Superior Charcoal, all numbers	$21.50 @ $22.50
Lake Superior Coke Bessemer	20.00 @ 21.00
Katahdin (Maine Charcoal)	26.00 @ 26.50
Lake Superior Coke Foundry, all ore	18.75 @ 19.50
Lake Superior Coke Foundry, cinder mixed	18.00 @ 19.00
Standard Ohio Blackband	19.00 @ 19.50
Southern No. 1	17.00 @ 17.50
Southern Gray Forge	14.75 @ 15.25
Jackson County (Ohio) Silvery	19.00 @ 19.50
Old Car-Wheels (nominal)	20.00 @ .....

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts.,
CHATTANOOGA, April 7, 1890.

Pig Iron.—Notwithstanding the reports that considerable lots of Iron have been sold at what are considered low figures, the general condition of the market is not that way by any means. The majority of the furnaces are holding firm at a concession of about 50¢ only below last week. The lowest that any sales have been made at, that have come to sight, is $13.95 for No. 1, at yard, and offers of $12.75 for the same grade, so far as can be learned, have been refused; $13 @ $13.50 may be said to be about the ruling figure for large round lots, for cash, at the Furnace Bank,

and many of these sales are free of commissions. We note the sale of 2000 tons No. 3 to a broker for $12, net cash; also 1500 tons No. 2, at $12.65, 60 days, free of commissions, at the furnace. It is generally conceded that the bottom is reached, although there may be some weak-kneed parties yet in the field.

Louisville.

LOUISVILLE, KY., April 7, 1890.

Pig Iron.—Buyers have been so timid for weeks past about making purchases, all fearing that their competitors by waiting a few days might secure an advantage, that the leading furnaces have settled the matter by putting prices to the lowest notch. Their action has been productive of considerable buying. Sales, however, are for prompt deliveries. Some large orders have been placed, and those who have been wise enough to take advantage of the situation have secured the bottom prices, and it is doubtful if orders can be placed next week on the low basis ruling to-day. Now that a general buying movement has commenced, it is likely to cause better prices, though the advance, on account of heavy production, will be moderate:

Southern Coke, No. 1 Foundry (new classification)	$15.25 @ $15.75
Southern Coke, No. 2 Foundry (new classification)	14.75 @ 15.25
Southern Coke, No. 3 Foundry (new classification)	14.25 @ 14.75
Gray Forge	13.75 @ 14.25
White and Mottled, different grades	13.00 @ 13.50
Silver Gray, different grades	13.75 @ 14.75
Southern Charcoal, No. 1 Foundry	17.00 @ 18.50
Southern Charcoal, No. 1 Mill	15.75 @ 16.75
Southern Car-Wheel, standard brands	23.00 @ 24.00
Southern Car-Wheel, other brands	18.50 @ 21.00
Hanging Rock Coke, No. 1 Foundry	16.50 @ 17.50
Hanging Rock Charcoal, No. 1 Foundry	20.50 @ 21.50
Hanging Rock, Cold Blast	22.00 @ 24.00

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, April 8, 1890.

Pig Iron.—The market in this district continues in an unsettled and unsatisfactory condition, and prices since the date of our report a week ago have further declined, but not so much as for some weeks preceding. The decline thus far, as compared with the highest point, has been from $2 to $2.50 ℔ ton on mill, and $6 to $6.50 on Bessemer, and these two grades now occupy about the same position in regard to value that they did a year ago. Demand, as a rule, is still of a hand-to-mouth character. In their anxiety to buy at the lowest point the market will get away from consumers who hesitate. It is the opinion of well-informed brokers and furnacemen that the market has about touched bottom, and this is based on the fact that present prices but little more than cover actual cost of production, and there is never much risk in buying an article like Pig Iron at cost. But a good many consumers would not buy as long as their neighbors hold off, and, as a consequence, they are all thrown upon the market at the same time and the price goes up at once. We quote prices as follows:

Neutral Gray Forge	$15.75 @ $16.25,	cash.
All Ore Mill	16.75 @ 17.00,	"
White and Mottled	15.00 @ 15.50,	"
No. 1 Foundry	18.00 @ 18.50,	"
No. 2 Foundry	17.00 @ 17.50,	"
No. 2 Charcoal Foundry	22.00 @ 22.50,	"
No. 1 Charcoal Foundry	24.00 @ 25.00,	"
Cold-Blast Charcoal	27.00 @ 30.00,	"
Bessemer Pig	18.00 @ 18.50,	"

In regard to Bessemer Pig, while a few lots have been offered and sold at $18, cash, there are no sellers for future delivery under $18.50 @ $19. We hear of the former price having been declined by one of our city furnaces within a few days for a round lot. So with mill Iron; while good brands can be obtained at $15.75 @ $16, cash, for immediate delivery, there are very few if any sellers for future delivery at the prices quoted.

Muck Bar.—There is rather more inquiry, but no improvement in prices; we now quote at $27.50 @ $28, cash. While city mills are refusing to sell at these prices, buyers are enabled to get all they want from other points.

Manganese.—We can report small sales of domestic 8 % Ferro at $95 ℔ ton for immediate delivery. The demand is chiefly for small lots for immediate delivery. Foreign is offering for future delivery considerably below prices quoted.

Manufactured Iron.—The more favorable weather during the past week, which appears to have been pretty general throughout the country, leads to the belief that there will be an increased demand for all kinds of finished Iron soon; the weather directly, as well as indirectly, has more to do with the Iron business than most people are aware of. Many parts of the country have been nothing but huge beds of mud since last October, stopping all kinds of outdoor work, in addition to which the roads were simply impassable, and transportation by horse-power out of the question. Prices continue easy, in sympathy with raw material, and for desirable orders our quotations would probably be shaded. Our quotations are for first quality Iron: Bars, 1.85¢ @ 1.90¢; No. 24 Sheet, 2.90¢ @ 3¢; Plates, 2.30¢ @ 2.35¢; Skelp is lower; 1.75¢ @ 1.80¢ for Grooved and 2.10¢ @ 2.15¢ for Sheared.

Structural Iron.—There is some inquiry, which it is expected will result in a considerably increased business before long. Prices remain unchanged. Angles, 2.30¢; Tees, 2.75¢; Beams and Channels, 3.10¢ Sheared Bridge Iron, 2.80¢; Universal Mill Plates, 2.45¢; Refined Bars, 2¢.

Nails.—The Nail market continues in an exceedingly unsettled and unsatisfactory condition; not only is the demand light, but prices are so irregular that it is exceedingly difficult to give reliable quotations. Cutting is always more common when the market is dull, as is the case at present, and has been for some time past. Steel Cut Nails are quoted at $2 @ $2.10, 60 days, 2 % off for cash, and Wire Nails at $2.50 @ $2.60.

Steel Plates.—There is nothing new to note in connection with this interest. There is a fair business reported, but no change in prices. Fire Box, 4¼¢ @ 4¼¢; Shell, 3¢; Flange, 3.20¢; Tank, 2.70¢.

Wire Rods.—Demand, from all that we can learn, shows no improvement, while prices remain as last quoted, $49 @ $50, cash, ℔ gross ton. Possibly the above quotations would be cut for a desirable order

Merchant Steel.—There is a fair business reported, which promises to be increased as the season becomes more advanced. Manufacturers are hopeful of an increased demand within the next few weeks, and the indications are that expectations will be realized. Prices remain unchanged: Tool Steel, 8¢ and upward; Crucible Spring Steel, 4¢; Open-Hearth Steel, base sizes, 2¼¢ @ 3¢; Bessemer Machinery Steel, 2.40¢; Tire Steel, 2.55¢.

Wrought-Iron Pipe.—There is a continued fair degree of activity; mills are pretty well employed. The outlook warrants the belief that business this year will be fully up to that of 1889. It is stated that the Standard Oil Company will be a larger buyer this year than ever before, and then the demand from other sources will, it is expected, be fully to an average. No change in prices.

Billets and Blooms.—In regard to Bessemer Steel Billets the feeling appears to obtain that the market has touched the lowest notch, and during the past week there has been little or no change in prices, which may be quoted at $28.50 @ 29.50, with a sale of 1000 tons reported at $29. Some manufacturers are refusing to accept less than $30, but they are not making very many sales. We are cognizant of sales having been made as low as $28.50, but that is the lowest we have any knowledge of.

Old Rails.—The market for Old Iron Rails continues dull and prices have further declined; we are advised of sales of lots aggregating about 1000 tons, part at $24 here and part at same price delivered to a mill in Mahoning Valley; Old Steel Rails dull, and in the absence of sales may be quoted nominally at $21@ $22

Steel Rails.—Heavy sections are still quoted at $33 @ $34, cash, at mill. A report comes from Chicago that a sale was made there within the past week by a mill east of that point, for delivery west of Chicago, of a lot of 14,500 tons at a price somewhat less than $34, at Chicago. The Allegheny Bessemer Company are reported as having booked an order for 10,000 tons within the past few days.

Old Material.—The demand for all kinds of Old Material continues light and prices weak. No. 1 Wrought Scrap $21 @ $22, net ton; Car Axles, $28 @ $28.50; Cast Scrap, $15.50 @ $16, gross ton; Old Car-Wheels, $19 @ $20; Steel Bloom Ends $22.

(*By Telegraph.*)

Bessemer Pig, according to rumor, has been sold as low as $17.65, cash, but offers of $18, cash, have been declined within the past day or two. A sale of Forge Iron is reported at $15.50, cash, but city furnaces refuse to sell under $16, cash. A lot of 1000 tons Southern Mill Iron is said to have been offered at $15, cash, delivered in Pittsburgh. Sales of Muck Bar at $27.75 @ $28, cash. Steel Billets are being offered at $28, cash, on cars at Wheeling, but $28.50, cash, is the lowest price reported here as yet, and some of our manufacturers are asking from $29 up to $30. Andrew Carnegie is credited with having said the other day that the demand for Steel Rails this year would fall considerably below the capacity for making the same.

Robinson & Orr, Iron and Steel Brokers, have removed their offices from the Hamilton Building to 416 Wood street. In addition to carrying on a general brokerage business in iron and steel, they have added an investment department and will deal largely in Lake Superior iron mining stocks. This department will be in charge of Robert A. Orr, while the other members of the firm will attend to the iron and steel department.

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, April 7, 1890.

Pig Iron.—The decline in prices continues and it now appears that bottom has about been reached, as we are gradually nearing the prices that were current last summer, which it is needless to say were considered very low. It is evident the opinion is gaining ground that at present prices Iron is a good purchase, as one of the most conservative manufacturers in this city has just placed orders for 12,000 tons of Southern No. 2 and 3 Foundry Iron, terms private. Inquiries for small lots for immediate shipment are received

and it seems quite possible that a brisk trade can be looked for as soon as prices show some steadiness. The general feeling is hopeful, however, and the present low range of prices is thought to be only temporary, and should the demand become stimulated before the summer months are upon us some improvement in prices can be looked for. Charcoal Irons have been unusually dull, with little or no change in prices, while Ohio Softeners show more strength than any grade in the entire list. The following quotations show the basis on which sales are made, for cash, f.o.b., St. Louis:

Southern Coke, No. 1 Foundry,	$15.75 @ $16.25
Southern Coke, No. 2 Foundry,	15.25 @ 15.75
Southern Coke, No. 3 Foundry,	14.75 @ 15.25
Gray Forge	14.25 @ 14.75
Southern Charcoal, No. 1 Foundry	19.00 @ 19.50
Southern Charcoal, No. 2 Foundry	18.00 @ 18 75
Missouri Charcoal, No. 1 Foundry	18.75 @ 19.25
Missouri Charcoal, No. 2 Foundry	18.00 @ 18.50
Ohio Softeners	18.75 @ 19.50

Connellsville Coke, f.o.b. East St. Louis, $5.65; St. Louis, $5.80.

Bar Iron.—Business does not improve to any great extent and prices are correspondingly weak. Mills are accepting business at from 1.80¢ @ 1.85¢, and small lots from store can be bought from 1.95¢ to 2¢.

Barb Wire.—Mills report a fairly active trade, but prices are not as satisfactory as they might be. Jobbers appear to be well stocked with Wire and cannot be induced to buy except by the offer of liberal concessions on the part of the mills, which, in some instances, are given to secure the business. For ordinary sized lots we quote as follows: Painted, 3.20¢ @ 3.25¢; Galvanized, 3.80¢ @ 3.85¢; carload lots, 10¢ ℔ cwt. less than above prices.

(*By Telegraph.*)

The market has improved slightly during the past two days. Inquiries from country customers for round lots are being received, and it is to be presumed that the low prices which are prevailing will lead to an increased business. It seems quite probable that consumers will recognize the advisability of replenishing their stocks now, as they can do so at prices that are nearly as low as those quoted during the dull period of last May and June. Reports reach this market that considerable Iron has been bought for storage in warrant yards. Freight rates on Pig Iron from the Birmingham district will be reduced 30¢ ℔ ton, to take effect the 16th inst., and a further reduction of 10¢ to take effect May 1.

Cleveland.

CLEVELAND, April 7, 1890.

Iron Ore.—Beyond a few unimportant sales of Non-Bessemer Ores at $4.50 the market has been comparatively lifeless during the week just closed. There is great activity on the river, where hundreds of vessels are getting in readiness to bring down the immense quantities of Ore already sold. The first ship loads will probably be sent out from Escanaba about April 20. Lake freights are unchanged. Prices remain firm at the following quotations:

No. 1 Specular and Magnetic Bessemer Ores, Bessemer quality	$6.50 @ $7.25
No. 1 Specular and Magnetic Ores, Non-Bessemer quality	5.50 @ 6.25
Red Hematite Ores, Bessemer quality	@ 6.00
Red Hematite Ores, Non-Bessemer quality	4.50 @ 5.00
Menominee Range Ores, Bessemer quality	5.50 @ 6.25
Menominee Range Ores, Non-Bessemer quality	4.25 @ 5.00
Gogebic Range Ores, Bessemer quality	5.25 @ 6.25

Pig Iron.—Notwithstanding the depressing influences of exciting local elections, the changes in the general tone of the market have been in the line of improvement. Prices have not remained steady, except for Bessemer Iron, but it is believed that in the increased inquiry, reported on every hand, can be detected the preliminary signal of the reaction sure to come before the elapse of many weeks. Stocks are certainly low, and a few substantial purchases by the larger purchasers will infuse life into the whole market. Sales just at present, however, are confined to very small and unimportant quantities, buyers still asking concessions if large amounts are involved. Despite all discouraging circumstances, the market is more steady and the general feeling more confident than for several weeks. Following are quotations:

Lake Superior Charcoal	@ $22.00
Bessemer Pig	19.50 @ 20.00
No. 1 Strong Foundry	18.30 @ 19.30
No. 2 Strong Foundry	17.30 @ 18.30
No. 1 American Scotch	18.80 @ 19.80
No. 2 American Scotch	17.80 @ 18.80
No. 1 Soft Silvery	17.50 @ 18.00
Mahoning and Shenango Valley Neutral Mill Irons	16.30 @ 16.80

Old Rails.—Several small lots of Old Americans have been sold during the past week at $24.25 @ $24.50. Consumers, however, seem well supplied and the demand is not heavy. Selected Axles at $28 are being inquired for with considerable freedom.

Nails.—The market is quiet and prices are slightly under last week's figures, Steel Wire Nails being now quoted at $2.75 and Cut Steel Nails at $2.30. The decline is attributed to a slight overproduction.

Manufactured Iron.—Common Bar is quoted at 1.70¢ @ 1.75¢, but the market is weak and the demand by no means steady or reliable.

(*By Telegraph.*)

Beyond the sale of 200 tons of Charcoal Iron at $22 the market has been comparatively inactive. By the time this week's issue of *The Iron Age* leaves the press a dozen of the largest lake vessels will be on their way to Escanaba for their first cargoes of Ore and 100,000 tons of new Ore will have arrived by April 30. Bar Iron is still weak at 1.70¢, from the mills.

New York.

Office of *The Iron Age*, 66 and 68 Duane street, NEW YORK, April 9, 1890.

American Pig.—The market is still in a more or less unsettled condition. Some anxiety exists as to what steps the first law of nature may prompt certain recognized leaders in the sale of standard Pennsylvania brands in this locality to take in view of the sharp competition from sellers of Southern Iron, and, in the absence of information on that point or new developments in other directions, business is deferred to a certain extent. In remote cases prices as low as those quoted last week for Southern Pig are still heard of, but local representatives of the largest concerns quote $17.50 @ $18 for No. 1 and $17 @ $17.50 for No. 2 X as their lowest figures, claiming not to have made sales at lower rates. The assertion is quite general that strictly No. 1 Foundry is in comparatively light supply in the South, one company indeed, refusing, it is said, to take orders for other than small quantities. An offer of $16.50 for 5000 tons No. 1, for forward delivery, was made by a broker and found no takers. The intending buyer, it is claimed, would pay $17 for that quantity of any of the recognized first-class brands. On Northern Iron the lowest prices quoted are $18 for No. 1 and $17 for No. 2 X, which figures do not appear to be named except on stock in second hands regarding the quality of which there seems to be some doubt. On transactions in small lots for immediate delivery the ruling figures are $18.50 @ $19 for No. 1 and $17.50 @ $18 for No. 2, according to brand. There is a general belief that if any "cut" is made in prices of leading Northern Iron it will be no half-way measure.

Bessemer Pig.—Eastern prices are practically the same as quoted last week, being about $19 @ $19.50 in Eastern Pennsylvania, and relatively lower further West.

Spiegeleisen and Ferromanganese.—Few transactions have been reported, but there is still some trade under negotiation, with a fair prospect of business. About $33.50 @ $34 seem to be sellers' inside figures for 20 % Spiegeleisen and $33 the best offer. Ferromanganese, 80 %, is quoted at $82.50 upward for forward delivery, and about $90 for prompt.

Steel Rails.—Apart from small sales for early delivery there has been no business in the East, and orders are rather scarce as well as invariably small at the present time. What transactions have gone through were at $34, at the mill, for heavy sections. Brokers are said to have offered at $34, at tidewater, however, and to have also solicited bids of $33. How far the brokers acted upon their own responsibility is, however, open to question. It is an open secret that some manufacturers have orders on which there is a guarantee against a decline from the contract prices, and this fact, along with the absence of orders of sufficient magnitude to prompt low offers, may account in a measure for the present display of firmness. Pittsburgh is still relatively lower than the East. That fact is suggestive in itself, as is also the placing of the recent C., B. and Q. order for 14,000 tons on which Pittsburgh underbid the Chicago mill.

Fastenings.—The demand improves very little, if at all, and prices are still weak. Splice Bars are quoted at 1.75¢ @ 2¢. Spikes may be purchased at $2, at mill, and $2.10, delivered. Bolts and Square Nuts are nominally 2.9¢ @ 3¢ and Bolts and Hexagon Nuts 3.10¢ @ 3.15¢, delivered.

Old Iron Rails.—A lot of double-heads has arrived. The owners offered at $26.50, but, receiving no satisfactory bid, placed the lot in store. Tees are nominally $24 @ $24.50, with very little demand from any quarter.

Financial.

The week has been clouded in a financial point of view by a series of failures, attended with disclosures reflecting upon the management of prominent firms hitherto in good repute. The effect has been not so much to impair confidence in the general business situation as to excite a closer scrutiny of paper and collaterals offered as security. The latest event is the suspension of the old banking and brokerage firm of Geo. K. Sistare's Sons, in Broad street, said to have been precipitated by a defalcation in the firm's accounts. Reports in the street estimate the deficit at from $250,000 to $500,000, or upward. A Philadelphia dispatch says the trouble is due to the misappropriation of the firm's money and securities by Douglas Hilger, who, until his death ten days ago, was a member of the firm and in charge of its business in that city. The tangled affairs of the now defunct firm of John F. Plummer & Co., dry goods men, have also engaged attention,

W. S. Darling, one of the partners having disappeared, leaving an apparent discrepancy of something like $1,000,000, against which there is a doubtful lot of assets. The report of the assignee will be expected to show overdrafts of which no record was made. As a sequel to the Grant & Ward failure, the receiver was authorized by Judge Andrews to settle any suit, action or proceeding. The Senate Finance Committee promise a prompt consideration of the tariff as soon as the McKinley bill is reported to the House, instead of waiting for the action of that body. The Equitable State Bank, which was involved by the operations of the gang of bank wreckers, and was subsequently boosted into a position to resume business through the exertions of Conrad N. Jordan, late president of the Western National Bank, will go out of business, all claims being paid in full. Treasurer Simmons, of the World's Fair Committee, reports a surplus of $10,000 to be returned to subscribers.

On the Stock Exchange the tone of the market at the opening of the week was dull but strong and promised well for increased activity, but the suspension of a prominent brokerage firm and free selling of Reading caused a declining tendency. The Western meeting of railroad presidents adjourned to April 15. The war against President Corbin, of the Reading Railroad, was brought to a sudden end in a compromise by which the opposition is given a representation on the Board of Managers.

United States bonds are quoted as follows:

U. S. 4½s, 1891, registered	103½
U. S. 4½s, 1891, coupon	103½
U. S. 4s, 1907, registered	122
U. S. 4s, 1907, coupon	122
U. S. currency 6s, 1895	116

The weekly statement of the associated banks showed a loss in surplus reserve of $2,889,175, which reduces the excess to $1,442,550, against $4,331,650 last week, $1,409,575 for the corresponding week in 1889, $8,620,875 in 1888 and $4,115,575 in 1887. The decrease is due to shipments of money to the interior to meet April 1 settlements. The return of these funds will naturally give a different complexion to the statement to be issued on Saturday next. In loans there was an expansion of $3,430,100. Money has been fairly easy for the first week in April. Time money is quoted 5 % for all periods on prime collateral. Commercial paper quiet. The best double-name paper is quoted at 5½ @ 6 %, with exceptional transactions at 5 %, and prime single-name at 6 @ 7 %. The banks are very reluctant to take single-name paper, owing to the late failures, and the market is rather flat in consequence.

The Canadian banks advanced their posted rates of sterling exchange to 4.86 and 4.88½, but other leading drawers still hold to 4.85½ and 4.88.

The six white lead companies which belong to the Lead Trust and which recently merged themselves into one company under the title of the National Lead and Oil Company organized on Monday by electing W. P. Thompson president, he being also president of the Lead Trust; R. T. Rowe, vice-president; E. C. Webster, treasurer, and John L. Stevens, secretary.

The clearings of 51 cities in the United States for the week ending April 5 showed a decrease of 12.2 %. Chicago increased 19.5, St. Louis 21.6, Denver 76.8, Fort Worth 38.1, and Sioux City 47.5. New York decreased 12.2 %, Boston 11.2, Philadelphia 17.6, St. Paul, 8.7. New Orleans 21.8 and Minneapolis 20.1 %. For the month of March the clearings of 52 cities aggregated $4,629,998,807, an increase of 1.9 % as compared with 1889. For the quarter ended March 31 the clearings of 50 cities were $14,307,060,713, an increase of 6 %. New York gained 4.3 %.

The all-rail east-bound shipments of dead freight from Chicago last week aggregated 70,830 tons, against 91,485 tons the previous week and 45,577 tons the corresponding week of last year.

Large as the membership of the Clearing House Association is there are 76 banks and trust companies in this city and vicinity which are not members and who are obliged to clear through banks belonging to the association. At the time of the Sixth National Bank scandal President James, of the Garfield Bank, offered a resolution prohibiting banks in the association from clearing for banks outside the association. This resolution has been referred to a committee composed of Messrs James, Percy R. Pyne, George C. Williams, E. D. Randolph, E. H. Perkins and George S. Coe, representing the Garfield, City, Chemical, Continental, Importers' and Traders' and American Exchange banks. Strong opposition is expected.

Imports of merchandise for the week are valued at $12,060,000; exports, $5,392,000.

The general markets show some improvement, although weather conditions have been unfavorable and crop exports from the West are conflicting. Breadstuffs in some instances are slightly advanced, with a better market, partly on export account. Wheat is irregular, but a shade higher Spot cotton is dull at $\frac{1}{16}$¢ advance. India-rubber active; prices well sustained. Turpentine steady at 43¢ for spot lots. Provisions, an improved demand. Raw sugars quiet, refined easy. The ocean freight movement is somewhat freer, but at easier and irregular rates. Tonnage for petroleum is attracting increased attention at the reduced figures now ruling.

Metal Market.

Copper.—The London market has shown very little change since the date of our last report. Latest cables quote Merchant Bars at £48 spot and £48. 5/ futures. In the local market business has been on a moderate scale, and little in the way of new demand has been heard of. The mining companies are firm at 14½¢ for Lake and nothing is offered from second hands at a lower price at the moment. There is an impression, however, that offers of 14½¢ for deliveries some little time ahead would be accepted. Whether 12½¢ would yet be accepted for common casting Copper is uncertain, but considered probable, although the producers' representatives quote 12¾¢ as a close price. Arizona remains at 13¼¢. The demand for the common class of Copper is rather slow at the present time and chiefly for rather small lots for immediate delivery.

Tin.—Business in this metal has been almost at a standstill. London quotations came practically the same as they were prior to the holidays, and nothing has arisen to stimulate speculation or induce consumers to buy more freely. The tone of the market is rather weak. Straits may be had at 20.05¢ @ 20.10¢ on the spot, in 5 to 10 ton lots, and at 20½¢ @ 20.35¢ in jobbing quantities. *Tin Plates.*—The demand has not improved in the slightest. Trade wants appear small, canners and canmakers buy sparingly and the oil packers do not enlarge the scope of their purchases. Penlan and J. B. grade Cokes and ordinary size Bessemers have been sold at 5¢ decline. We quote at the close, per box: Siemens-Martin Steel, Charcoal finish, $5.50 @ $6; Coke finish, $5 @ $5.25; Coke Tins, Penlan grade, $4.40 @ $4.45; J. B. grade, $4.50 @ $4.60, and Wasters, $4.30.

Lead.—Sales in this market have not increased nor has there been the slightest improvement in the demand. There is no new feature whatever. Prices remain as they were last week, 3.85¢ being the best bid, and 3.90¢ generally asked. The Western markets continue rather weak, with 3.70¢, the price wired from St. Louis.

Spelter.—Western Spelter of the more common grades suitable for galvanizing have been sold at as low as 4.95¢ @ 5¢, which prices are quoted to-day. The better brands preferred by Brass manufacturers are quoted at 5.15¢ @ 5.35¢, within which range five carloads or more have been sold. Silesian is nominally 6¼¢ here. London prices are down to £20.15/ for ordinary Silesian.

Antimony.—Business is still restricted by the limited supply available here. The nominal prices are 21¢ for Hallett's and 28¢ for Cookson's brand.

Imports.

Hardware, Machinery, &c.

Almquist, A. W. A., Mach'y, pgs., 36; ditto, box 1
Ankam, H., & Co., Mach'y, pgs., 20
Bingham, Anvils, 50
Boker, Hermann & Co., Arms, cs., 30
Barbour Bros. & Co., Mach'y, cs., 11
Curley, J. & Bro., Cutlery, cse, 1
Chicago Ship Building Co., Mach'y, pgs., 53
Downing, R. F., & Co., Mach'y, cs., 2
Electric Cutlery Co., Mdse., cs., 4
Field, Alfred & Co., Arms, cs., 14; Mdse., cs., 20
Folsom, H. & D., Arms Co., Arms, cs, 5
Godfrey, C. J., Arms, cs., 10
Graef Cutlery Company, Cutlery, cs. 6
Hartley & Graham, Arms, cs., 71
Ladenburg, Thalman & Co., Mach'y., cs., 7
Moir, E. W., Mach'y, pgs., 183
Read, W., & Sons, Arms, cs., 3
Sheldon, G. W. & Co, Iron-Ware, cse., 1; Mach'y, pcs., 20
Stark, Chas. & Co., Arms, cs., 34
Schoverling, Daly & Gales, Arms, cs., 2
Taylor & Taube, Mach'y, pgs., 112
Tryon, E. K., & Co., Arms, cs., 10
Werlemann, H., Arms, cs., 20
Wiebusch & Hilger, Anvils, 96; Arms, cs., 8
Yale Machine Co., Mdse, cs., 6
Order—Shovels, bdls, 6

Coal Market.

The Anthracite Coal trade are awaiting the outcome of an important meeting appointed for to-day, Thursday, to consider the subject of a reduction in the rate of tolls, for which individual operators in the Lehigh Valley and on the line of the Central Railroad of New Jersey are clamorous. The conference will comprise the sales agents and representatives of the trunk lines. "The managers of the Anthracite roads argue that the present rate of tolls is the same as was in effect last spring, and that should any lower rate be now made the individual operators would simply give it to the buyer of Coal by further cutting the prices, and that that could neither increase the consumption of coal nor induce dealers or large consumers to buy any more stock than their immediate necessities require. On the other hand, the individual operators complain that the larger producing corporations are selling their output so low that the individuals cannot market their Coal excepting at a loss. In answer to this the mining and transporting companies say that in selling their Coal at the present low prices they are only meeting the competition of the individual operators to protect their own regular trade."

Prices of Anthracite are low and irregular, yielding the smallest margin of profit. The last official circular issued July 1, 1889, for Free-Burning Coal was as follows:

	Old circular.	Present prices.
Broken	$3.90	$3.75 alongside.
Egg	4.15	3.40 alongside.
Stove	4.40	3.50 alongside.
Chestnut	4.15	3.35 alongside.

In some lots afloat Free-Burning has been sold as low as $3.40 alongside, and Chestnut, $3.25 alongside.

Broken, Pea and Buckwheat continue scarce. Reading prices for Hard White

Ash are: Broken and Egg, $3.85; Steamer, $3.65; Chestnut, $3.40, f.o.b.

The total amount of Anthacite Coal sent to market for the week ending March 29 was 507,049 tons, compared with 534,201 tons last year. The total mined thus far in the year 1890 was 6,155,222 tons, a decrease of 668,032 tons, compared with 1889. Reading's Henry Clay colliery, near Shamokin, resumed 8th inst.

Bituminous Coal is unchanged, dull and inactive. An extensive canvas for Eastern orders was barren of result. Several heavy contracts have been placed. Prices not told.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, April 9, 1890.

Pig Iron warrants have been weak and depressed until within the past few days under the influence of continued free liquidation and "bearish" tendencies on the part of outside operators. The withdrawal of that pressure Tuesday resulted in a quick reaction, Scotch selling up to 49/5; Middlesbrough to 52/, and Hematites to 56/7 at the close. To-day there was business at 49/2 for Scotch, 52/ for Middlesbrough, and 59/6 for Hematites. Prices for makers brands of Scotch show unimportant changes only, and previous figures are quoted for Bessemer, but makers of Middlesbrough ask 2/6 advance. Spiegeleisen is now offered at 110/, and Steel Rails are quoted 5/ lower, but no further change has been made on Billets or Slabs.

In the Tin Plate market no new features have developed and the impression is that the majority of buyers have held their orders back pending the results of the next quarterly meeting to be held to-morrow. The stock at shipping points amounts now to 538,000 boxes, against 351,000 boxes at the corresponding period last year. Only 17,000 tons were exported to the States last month, against 31,000 tons during March, 1889.

Copper.—Merchant warrants are nearly all absorbed by consumers. The quantity of Chili Bars available lately has been limited, and consumers are buying all that they can get hold of. In furnace material, sales are confined chiefly to argentiferous Matte. There is a noticeable decrease in the arrivals of American Copper. Large quantities of ingots and bars have recently been shipped to France and Germany. Recent sales of furnace material include 190 tons Montana Matte at 10/; 100 tons tons Montana argentiferous, private terms; 2775 tons Anaconda argentiferous, also private terms.

Block Tin prices have shown little fluctuation and speculation continues inactive. There has been a fair business for consumption, however, at about last weeks figures. To-day's business was at a slight decline and the market closed flat.

The Board of Trade returns show only 5000 tons of all descriptions of Pig Iron exported to the United States last month, against 12,000 tons in March, 1889.

Bessemer Pig.—Business has been somewhat brisker and the market is showing rather better tone. West Coast brands, Nos. 1, 2 and 3 quoted at 70/, f.o.b. shipping port.

Scotch Pig.—In makers' Iron there has been only a moderate trade. Best brands are more firmly held, but prices for others continue irregular.

No. 1 Coltness,	f.o.b.	Glasgow	72/
No. 1 Summerlee,	"	"	71/
No. 1 Gartsherrie,	"	"	70/
No. 1 Langloan,	"	"	71/
No. 1 Carnbroe,	"	"	50/6
No. 1 Shotts,	"	at Leith	71/6
No. 1 Glengarnock,	"	Ardrossan	70/
No. 1 Dalmellington,	"	"	62/
No. 1 Eglinton,	"	"	52/6

Steamer freights, Glasgow to New York, 2/, nominal; Liverpool to New York, 10/.

Cleveland Pig.—There has been only a moderate business, but makers ask higher prices, owing to the advance in warrants, and now quote No. 3 Middlesborough at 52/6, f.o.b.

Spiegeleisen.—A fairly active demand is reported and the market is steady at the required quotation. English 20 % quoted at 110/, f.o.b. at works.

Steel Rails.—Inquiries more numerous and the market looking steadier. Heavy sections quoted at £5. 10/ and light sections £6 @ £6. 15/, f.o.b. at N. W. England shipping point.

Steel Blooms.—Demand has continued very quiet. We quote £5. 10/ for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—No improvement in sales or demand. Bessemer 2½ x 2½ inch, £5. 10/, f.o.b. at N. W. England shipping point.

Steel Slabs.—Transactions small and makers' prices unchanged. Bessemer, £5. 10/, f.o.b. at N. W. England shipping point.

Old Rails.—A very quiet market and prices nominal. Tees quoted at £3. 15/, and Double-Heads £3. 17/6, f.o.b.

Scrap Iron.—Sales small at former prices. Heavy Wrought quoted £3. 5/, f.o.b.

Crop Ends.—The market very quiet and prices nominal. Bessemer quoted £3. 5/, f.o.b.

Tin Plate.—Slightly more demand at the close and the market steadier. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	16/6 @ 7/
IC Bessemer Steel, Coke finish	15/6 @ 16/
IC Siemens " " "	15/9 @ 16/3
IC Coke, B. V. grade	14/ @ 14/6
Charcoal Terne, Dean grade	14/3 @ 14/6

Manufactured Iron.—No improvement in the demand and prices still more or less in buyers' favor. We quote f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Marked Bars				@	9	10	0
" Common "				@	8	00	0
Staff. Bl'k Sheet, singles				@	9	15	0
Welsh Bars (f.o.b. Wales)				@	7	7	0

Tin.—The market dull and closes easier. Straits quoted at £90, spot, and £90. 17/6 for three months' futures.

Copper.—Demand has moderated and prices are not so firm. Chili Bars quoted at £48, spot, and £48. 17/6, three months futures; Best Selected, £55.

Lead.—A moderate business at unchanged prices. Quoted at £12. 10/ for Soft Spanish.

Spelter.—Prices again a shade lower and demand moderate. Quoted at £20. 15/ for Ordinary Silesian.

An Iron Coal Breaker.

A powerful iron coal breaker is being erected by Coxe Bros. & Co., at Drifton, Pa., in the Lehigh region, the first of its kind. It has massive foundations of hewn stone, upon which are placed heavy cast-iron columns connected by wrought-iron cylinders and braced with iron rods, the whole roofed in with corrugated iron and steel sheeting. The building measures about 122 x 39.3 feet. Upon the east side as the lump-coal shute with a horizontal length of 51 feet 3 inches, pitching 3¾ inches to the foot. The sides of the shute ire of ½-inch wrought iron and the bottom is of 1-inch cast-iron plates. Beneath this is the steamer shute with the same pitch and similarly constructed. Upon the west side, some 30 feet from the ground, is erected a jig house extension, resting upon 8 x 8 inch cast columns. From the south side extends the plane, with a pitch of 7⅛ inch to the foot, of wrought iron, the stringers being 5-inch face and 18 inches in width; the girders are 8 inches by 24 feet and some 26 feet long, and the columns are of hollow castings 8 x 8 inches, similar to those in the jig house extension.

The equipment comprises four large Coxe corrugated rolls or crushers and two monkey rolls, also four of the new Coxe-Salmon gyrating screens. The capacity of the No. 1 breaker, working day and night, is said to exceed 525,000 gross tons of marketable coal, and the No. 2 iron breaker, it is estimated, will prepare about 2500 gross tons, daily with ease. The breaker machinery is to be run by a 60 horse-power engine. The cast columns and most of the cast iron plates are the product of the Drifton foundry. Wallace & Co., of White Haven, Pa., furnished some of the cast plates and struts. The wrought iron girders and the truss rods were manufactured at the Pencoyd Iron Works, Pencoyd, Pa., while the corrugated iron roofing and sheathing was made by the Cincinnati Corrugated Iron Company, of Cincinnati, Ohio.

The suit of R. B. Wigton & Sons against the Pennsylvania Railroad Company to recover "treble the amount, with interest, of the undue, unreasonable, excessive and unlawful charges" for the carrying of coal from plaintiffs' mines, was decided on Saturday by Judge Biddle, in Common Pleas Court, Philadelphia, against the firm. The decision says "that the provisions of the act of Assembly of June 4, 1883, so far as they attempt to regulate the charges of freight transported from this State to foreign countries or to other States, to be unconstitutional and void, as being within the exclusive jurisdiction of Congress and forbidden to the States, as declared by the Supreme Court of the United States."

Another break occurred in the caisson of the North River tunnel, on the New York side, which may seriously interrupt the progress of the work. A laborer accidentally ignited the oakum and pitch in the seams while looking for a leak, and the fire burned a hole through the timbers, so that it was necessary to flood the caisson in order to stop the fire. A bulkhead was being built across the tunnel, about 50 feet from the base of the shaft, which, when completed, would have done away with the use of the caisson. There are to be two walls of brick to this bulkhead 4 feet each in thickness, and one had already been finished. Engineer More says it is a great mistake to build caissons of timber, as is done in this country; that they are built of iron in England, which is much preferable and would prevent accidents of this kind.

SOUTHERN MISCELLANY.

A test was made during the past week at Anniston, Ala., by B. F. Peacock, superintendent of the forge department of the United States Rolling Stock Works, that demonstrates the excellent quality of the iron manufactured at that place. A carload of coke iron was selected and worked into car axles. Five axles were made, taking the iron as it ran, without the addition of any other better grade of iron. These axles were then tested by A. W. Fiero, inspecting engineer of Robert W. Hunt & Co., of Chicago. The drop was 1640 pounds in weight and 10 feet high, three times in succession and 15 feet twice. Mr. Peacock furnishes the following tabulated statement of the test :

Axles tested in the following order.	Deflections, 1st blow 10 feet.	Deflections, 2nd blow 10 feet.	Deflections, 3d blow 10 feet.	Deflections, 4th blow 15 feet.	Deflections, 5th blow 15 feet.	Remarks.
1st	1¼	¼	1⅛	⅜	1⅛	No fracture.
2nd	1⅛	⅜	1⅛	⅜	1¼	No fracture.
3rd	1⅛	¼	1⅛	⅜	1⅛	No fracture.
4th	1¼	3-16	1⅛	⅜	1⅛	No fracture.
5th	1⅛	¼	1¼	⅜	1¼	No fracture.

The uniformity of the deflections in this experiment is strikingly noticeable.

The tract of ore lands, consisting of 1400 acres, recently purchased at Oredell, Ga., by Atlanta and Cartersville parties, will be developed at once.

A machine shop is to be opened at Hopkinsville, Ky., by J. J. Metcalf.

The work of building the Trenton, Tenn., foundry and machine shops has begun.

A company is being formed at Aberdeen, Miss., to absorb and enlarge the present foundry and machine shops of Enderlin & Beronio.

A boiler and engine works is negotiating for removal to Memphis, Tenn.

A $250,000 bridge works company is being formed at Baltimore, Md., to erect works at Curtis Bay or Canton. It is stated that the new company may buy the plant and tools of the Mount Clare shops, which belong to the Baltimore and Ohio Railroad Company. The incorporators are James Sloan, Jr., W. B. Brooks, W. B. Frick, of Baltimore, with capitalists from New York, Pittsburgh and elsewhere.

William Arthur, J. W. Forrest and S. W. Ritchie have organized the Pioneer Iron Works, with a capital stock of $20,000, at Middlesborough, Ky. A general foundry and machine business will be conducted

The Southern Arms and Cartridge Company will establish firearms supply works at Memphis, so it is announced.

The West Huntsville Land and Improvement Company have arranged for the building of an iron furnace at West Huntsville, Ala.

A machine shop is among the enterprises of Lewisburg, Tenn.

Parties in Chattanooga will establish works for the manufacture of electrical supplies.

Joshua Lancaster, manager of the Talladega, Ala., Furnace Company furnishes the following analyses of the Talladega iron worked up into steel blooms by the bloomery at Anniston. There were three samples:

	No. 1.	No. 2.	No. 3.
Carbon	0.2365	0.2022	0.2131
Silicon	0.1401	0.1391	0.1480
Phosphorus	0.0317	0.0342	0.0350

Furnace No. 3, of the De Bardeleben Coal and Iron Company, of Bessemer, Ala., was blown in on the 2nd inst., amid elaborate ceremonies. The fires were lighted by vice-president Milton H. Smith, of the Louisville and Nashville Railroad, who was present with a party of capitalists. Furnace No. 4 will go into blast next week.

A $60,000 boiler, engine and foundry works will be established in Sheffield, Ala.

A Philadelphia syndicate has purchased 3600 acres of mineral lands near Knoxville, Tenn., and announce their intention of erecting a steel plant.

The Alabama Furnace Supply Company are opening new ore mines near Sheffield.

Options have been given to a wealthy syndicate on magnetic iron properties near Dahlonega, Ga., and the same will be developed.

Americus, Ga., inside of one week arranged to establish a big iron foundry and machine shops, a plant for the manufacture of all kinds of iron castings, and plow and cultivator works.

At Greensboro, N. C., the Eagle Foundry, with a capital stock of $30,000, has been organized, with W. J. Teague as secretary and treasurer, and J. D. Donnell as general manager.

Parties at Anniston, Ala., are talking up a nail mill.

The Bessemer, Ala., rolling mill has let a contract for the construction of a stock house.

The Hale-Davidson Hardware Company was organized at Rome, Ga., last week, with a capital stock of $50,000, one-fifth of which has already been paid in. E. J. Moultin, is to be president, D. P. Hale vice-president and general manager, and C. G. Davidson secretary and treasurer.

The Bay State Furnace Company, of Fort Payne, Ala., announce their intention of erecting a furnace.

There are valuable deposits of tin at King's Mountain, N. C. A company was organized a few years ago to develop the property, but the machinery for separating the ore was bunglesome and defective and the enterprise was abandoned. It is now stated that a new company will probably develop the property with ample capital and improved machinery.

New York capitalists are examining red and brown hematite ores to be found around Adairsville, Ga., and may make evtensive purchases preparatory to putting in an iron furnace.

It is reported that a party of Northern capitalists contemplate the erection, at Charleston, S. C., of a factory to build railroad cars for the South and Central American trade. It is said that the company control most of the car-wheel plants of the country, and will manufacture carwheels in the proposed Charleston plant. The capitalists are to furnish $900,000 and Charleston business men $100,000. Your correspondent simply gives this as a rumor that has reached him.

The car-axle department of the Anniston, Ala., Rolling Stock Works, has orders booked for 16,000 axles, and in order to supply this demand the present capacity of 120 axles per day is to be doubled as soon as the necessary arrangements can be perfected.

Capitalists from New Hampshire, New York, Ohio and Tennessee have been in Rome, Ga., recently and will probably project several important enterprises.

The grading on the Western North Carolina Railroad has just reached the Tomotla iron property, six miles from the town of Murphy. These deposits of iron that are said to equal the Cranberry mines not far distant were purchased 20 years ago by Southern and Northern capitalists with the full expectation of that road being completed in two years from that time, but a multiplication of circumstances hindered its completion, and now after 20 years of patient waiting their hopes are soon to be realized. The confidence in the value of the property and its possibilities has caused them to decline repeated offers to sell the property at a large profit.

The W. S. Cox Plow Works, at La Grange, Ga., have manufactured and disposed of 8000 plows during the past season. A pretty fair showing for a small plant in a small town.

Parties are at the new iron town of Harriman, Tenn., negotiating for the establishment there of a plant to manufacture shelf hardware.

The 1200 feet addition to the Anniston car works of the United States Rolling Stock Company is nearing completion.

The foundry of C. B. Smith & Co., at Parkersburg, W. Va., will begin soon to manufacture steam engines.

The Chesapeake and Ohio Railroad Company have begun the erection of machine shops at St. Albans, W. Va.

The Gadsden, Ala., Furnace Company intend opening new iron properties.

During the first three months of the present year 23 furnace companies were organized in the South, against 17 in the corresponding period of last year. Of this number 7 were in Alabama, 6 in Georgia, 10 in Virginia and 1 each in Kentucky and Texas. During the period mentioned 43 foundry and machine shops were organized, Tennessee leading with 11, Alabama coming next with 10, and Virginia following a close third.

George R. Lombard & Co., of Augusta, Ga., have rented the building formerly occupied by the Milledgeville Iron and Machinery Works, and will open machine shops in that city.

New Orleans capitalists, it is stated, are to build a 100-ton coke iron furnace at Attalla, Ala.

The Cochran iron mines, near Rockmart, Ga., have been bought by a Boston party who will develop. It is said that a furnace may be built.

A. A. Lackowsky, of Morrillton, Ark., is erecting machine shops.

Parties from West Point, Ga., are at Americus, Ga., organizing a $50,000 machine shops and foundry company.

The works of the Columbia Variety Company, at Columbia, Ala., are to be rebuilt and a foundry added, with enlarged capacity in the machine shops.

Improvements are to be added to the charcoal iron furnace at Etna Furnace, Ga.

The Browning Iron and Railing Works, at Florence, Ala., has been leased by E. Rasch & Brother, who will take immediate charge and operate.

Three new boilers are to be added to the engine-room of the Brinkley, Ark., Car Works and Mfg. Company.

A wire fence factory is among the new industries to be established at Huntsville, Ala.

Business men of a Southern city desire to contribute $50,000 to Northern parties who will invest a like amount toward the establishment of machine shops, foundry and cast iron pipe works. E. A. Oldham, Norfolk, Va., can furnish information.

The newly completed charcoal furnace at Tallapoosa, Ga., has gone into blast.

Sites for two charcoal furnaces have been chosen at Grand Rivers, Ky.

There is a report in Southern iron circles that the famous Cranberry iron mines of Western North Carolina are about to pass into the hands of a wealthy English syndicate, who will build a town, erect furnaces, and establish iron manufacturing plants.

A $50,000 stock company has been formed for the purpose of getting control of the Enterprise Machine Works, of Mount Sterling, Ky., in order to move the entire plant to Lexington, Ky.

Parties from Chattanooga, Tenn., have organized a company at Pell City, Ala., and contemplate locating a number of enterprises, among which are furnaces, carwheel works and machine shops.

Hardware.

We can report little or no improvement in General Hardware, almost all accounts indicating a reluctance on the part of buyers to purchase freely. The roads are bad in many parts of the country, which, of course, keeps back the rural trade, and, more particularly, the weakness in Iron and other materials produces a feeling of uncertainty as to the future of prices. Still, manufacturers are as a rule well employed, and in several lines it is difficult to get orders filled with any degree of promptness. It is noticeable that manufacturers whose goods have been most recently advanced are more affected by this state of things than others.

The Cut Nail market remains in the same condition as at the date of our last report. Some inquiries for large lots have been made, but buyers show a disposition to hold off in the expectation of lower prices. We quote Iron Nails $1.90 to $1.95 per keg for carload lots on dock.

Wire Nails are still offered at very low figures. Some of the Western mills are making quotations on the basis of $2.50 to $2.55 for large lots at mill. It is not thought that higher prices will rule at any time this spring.

We cannot chronicle an improvement in Door Locks. Net prices are being very generally made, and this seems a very advantageous market for a buyer with a good order.

Manufacturers of Files are generally holding to the revised quotations made since the opening of the year, and consequently this market shows an evenness that has not been seen for some time.

Steel Squares remain in the unsettled condition noticed recently, owing to the competition of manufacturers among themselves. We quote discount 80 and 10 per cent. as a price to the general trade.

Makers of Cast Butts are holding their goods more firmly and the feeling is stronger, but without change in general quotations.

The improvement in Strap and T Hinges and Wrought Butts still continues, although jobbers who stocked up before the advance are in many cases offering at better than manufacturers' present quotations. In spite of this manufacturers are firm in their quotations and are doing a good business.

The Wire market shows no improvement over recent reports and is still in a very unsettled state. Prices, however, continue as before reported. The prices of articles into which Wire enters largely are naturally affected.

The Parry Mfg. Company, Indianapolis, Ind., report the demand for their well known Road Carts as being fully up to its usual standard. They are about to bring out a new half elliptic Spring Cart and a small four-wheel Road Wagon. The body of the cart will be constructed so as to accommodate small packages under the seat and will have no arm to interfere with getting in or out, features which will be appreciated by those using them.

The Cleveland Fence Company, Indianapolis., Ind., finding their present quarters on Biddle street inadequate to meet the demand which has sprung up for their productions, have purchased two and three-quarter acres of ground adjoining the Lake Erie and Western Railroad, within the city limits, upon which they will at once commence the erection of a one-story brick structure 100 x 285 feet, which will include smithshop, foundry and machine shop. The new building will be equipped with all modern improvements in the way of Tools and Machinery, and the capacity will be 2000 Fence Posts per day. The foundry capacity will be sufficiently large to accommodate 200 men. The company state that their present trade is fully twenty times greater than for the corresponding period of last year; also that they have brought out a new Farm Fence, which is rapidly winning favor.

The John P. Lovell Arms Company, Boston, Mass., on page 69, advertise the Lovell Diamond Safety, which was noticed very fully in our issue of the 27th ult. It is put upon the market as a strictly first-class wheel, while the price, $85, is very much below that usually demanded for such an article.

Gilbert & Bennett Mfg. Company, 42 Cliff street, New York, and 148 Lake street, Chicago, issue a notice that owing to the unsettled condition of the market all quotations are good only for immediate acceptance. All open orders sent them will be filled at prices current when received without regard to former sales or old quotations. They therefore request their customers to state if they expect goods at certain prices. It is also stated that if their customers expect goods at certain prices this should be specified so that there may be no misunderstanding, and giving the manufacturers an opportunity of notifying the customer that the prices indicated do not correspond with those current at the time the order was received. They also send us a sample of Aluminum Wire Cloth, it being a portion of the first roll made from this material. It is not expected that this will supersede cloth made of other metals, as its cost is three or four times that of brass. Still there are many purposes for which it can be profitably used. They recommend it for screens in waterworks where acids are used, for evaporators of fruits, strainers and druggists' sieves. Owing to the limited demand at present it will only be made to order, and in inquiring for prices a specification of quantity and sizes is desired.

Isaac Walker Hardware Company, Peoria, Ill., have issued an illustrated price-list of spring and summer goods, in which 36 pages are devoted to the exhibition of a large assortment of Steel Goods, Fishing Tackle, Lawn Mowers, Screen Doors, Sporting Goods, &c.

The Hopkins & Dickinson Mfg. Company, New York office 83 Reade street, New York, announce that under the new management the policy of the company will be to make only the finest grades of Builders' Hardware. Many improvements have been made in their factory with this object, as they intend to keep their goods up to a very high standard in every respect. Their prices, without being extravagant, will be such as to pay for superior goods. They wish us to call attention to their Columbia Cylinder Locks and Latches, which they claim to be superior to anything offered in that line. A new catalogue will shortly be issued, which when ready for distribution they will be glad to send to the trade.

The Grand Rapids Wheelbarrow Company, Grand Rapids, Mich., in their advertisement on page 48, illustrate one of their many styles of Barrow, which will be found worthy of the attention of dealers and contractors.

Our readers will observe the special notice on page 53 in which announcement is made that the partnership formerly existing between Joshua Britton and Horace E. Britton, of Stoughton, Mass., under the firm name of Joshua Britton & Son, has been dissolved by mutual consent, and that Horace E. Britton, having purchased the interest of the senior member of the firm, will continue the Awl manufacturing business and assume all accounts.

In noticing the Creamery Pails made by Sidney Shepard & Co., Buffalo, N. Y., by mistake we spoke of the "water-tight locking nut" instead of "water-tight locking cover." It is not probable that the careful reader was misled by this error, but it is a little unfortunate, in view of the fact that there are no nuts about the can and that the locking cover is a special feature.

Our advices indicate that the trade are taking much interest in the new Rogers Drive Screw described a few weeks ago in our columns. The American Screw Company report an excellent demand for them, although so short a time has elapsed since they were put on the market.

Walbridge & Co., Buffalo, N. Y., have issued an illustrated circular of seasonable goods, bearing date April 1. It is a pamphlet of 28 pages, and directs attention to Varnish and Paint Brushes, Post Hole Diggers, Wheelbarrows, Grindstones, Shovels and Spades, Steel Goods, Tree Pruners, Bird Cages, Milk Cans and a variety of other goods. An illustration is also presented of their attractive counter case containing one-quarter gross boxes of the Rapid Harness Menders.

In our special notices there appears an advertisement signed "Conservative," care of *The Iron Age*, Philadelphia. The advertiser is known throughout the Hardware trade as a gentleman of high character and of undoubted ability, and those requiring such business assistance as specified will do well to communicate with him.

The Nubian Iron Enamel Company, Chicago, Ill., have issued their calendar for April. It is accompanied by the usual testimonials, in which the merits of the Nubian Enamel are referred to.

Dame, Stoddard & Kendall, Boston, have secured the basement portion of store No 2 Franklin street, adjoining their main store, 374 Washington street, with connections to its various departments. The extension has a frontage of 40 feet on Washington, with a depth of 80 feet on Franklin street, with its principal entrance on the latter thoroughfare. In this department a complete stock of Base-Ball, Tennis and Athletic Goods, embracing everything pertaining to the line of gymnasium requirements, will be carried. The business of this house, as of their predecessors, Bradford & Anthony, has been extensively with the Hardware trade, who are now recognized largely as the jobbing and retail distributors of Fishing Tackle and specialties in Sporting Goods. The added lines of Athletic Goods now included in the stock of Dame, Stoddard & Kendall will be represented in a special catalogue, and they solicit business from the trade as well as from athletic clubs and gymnasiums throughout the country.

The illustrated catalogue of E. C. Stearns & Co., Syracuse, N. Y., is before us. This catalogue is handsomely printed and very tastefully bound in flexible cloth. Among the novelties we note the Keen Cutter Lawn Mower, recently introduced by this firm, which has some features of advantage. The driving-wheels are 9½ inches in diameter, enabling it to cut very high grass. It is handsomely finished, and all the details are carried out with the high standard of workmanship and care for which this house is distinguished. A very full line of Sliding-Door Hangers, Spring Hinges, &c., is described and illustrated with cuts

which show in many cases more than is usually given in catalogue illustrations. The book concludes with the excellent line of Hardware specialties made by them.

The new illustrated catalogue of Topping & Fox, 96 Chambers street, New York, is almost ready for distribution to their customers. This is a handsomely bound volume of over 300 pages, and besides a full line of Marine Hardware, of which this firm makes a specialty, it shows the goods of the Pennsylvania Bolt and Nut Company, Fayette R. Plumb, Walter Coleman & Sons, Cleveland Block Company, Plymouth Mills, and Gifford Brothers, of whom Topping & Fox are the representatives. It will be of special interest to the trade as containing the most recent lists of Bolts and Nuts. The book is well gotten up in convenient and attractive style, and several of the illustrations of Hammers, Hatchets, &c., are colored or bronzed to show the finish of the goods.

The Alford & Berkele Company, 77 Chambers street, New York, will soon issue a new illustrated catalogue of Cutlery, Plated-Ware, Fire-Arms, Mechanics' Tools, Specialties in Hardware, &c., which is intended for the export trade. It is printed in English and Spanish, side by side, making it equally convenient for persons using either language. It consists of 240 pages well illustrated, with a very convenient side index, enabling a person at a glance to refer to any of the principal contents. The catalogue is accompanied by a discount sheet referring to the goods by pages.

In the catalogue and price-list for 1890 of the White Mountain Freezer Company, Nashua, N. H., illustrations and prices of this line of goods for the coming season are given. They call attention especially to the well-known White Mountain Freezer, in which they are making improvements from year to year. Among their recent changes we notice the covering of the gearing. They have also added to their line the Granite State Freezer, to meet the demand for a low-priced article, and the manufacturers claim that it is the best double-action Freezer now in the market. They furnish a pretty lithographed card, with the dealer's imprint, to their customers for distribution, and a copy of a little pamphlet, styled "Frozen Dainties," containing a collection of receipts never before printed, prepared expressly for them by Mrs. Lincoln, the well-known cooking school teacher, is sent out with each Freezer. They will also be glad to mail it free upon application. They have established agencies and branch warehouses at 115 Broad street, Boston; 99 Chambers street, New York; 905 Market street, Philadelphia, and 14 West German street, Baltimore.

From a letter of W. A. Guenther & Son, Owensboro, Ky., we extract the following regarding the great cyclone:

The cyclone that destroyed part of Louisville passed through this country abovt 45 or 50 minutes before it struck Louisville, showing that it traveled at about 150 miles an hour. It totally destroyed the village of West Louisville, 15 miles south of here, and but one house out of 24 was left standing. It also destroyed parts of several other villages and passed our city less than one mile south of us. It may sound fishy to you, but parts of buggies and wagons are still hanging in high trees along the line of the storm. The writer saw this and found sections of slat and wire fence lodged in the trees two miles from where they formerly stood. At Green River, near Delaware, this county, it blew a raft of 500 logs out of the river on a bank 40 feet from the water, turned part of them completely over, and some were still standing on end when I visited the place. On the farm of William Calhoun, five miles south of us, the wind destroyed a large tobacco barn full of tobacco, and drove numbers of the tobacco sticks entirely through the frame residence standing 250 yards distant, partly unroofed the house, but left it standing, as it was newly built and had but one story and only one corner of it seemed to have been struck by the storm. This is only one of many instances I could name We have had overflowed rivers on the front and back of us for two months. This has greatly interfered with trade here.

The Niagara Stamping and Tool Company, Buffalo, N. Y., send us a copy of the tenth edition of their illustrated catalogue and price-list, which has just been issued. Some changes have been made in the manner of issuing the catalogues of this company, for instead of dividing it into several parts and publishing it as separate pamphlets, they have decided to send it out in a single volume. Heretofore the catalogue was divided into sections A, B and C, the different lines of goods being thus separated into three main classes. The presentation of the complete stock in a single book will, we doubt not, be very much appreciated by the trade, for the new system will permit readier reference and present the goods in a more compact form. The present volume of nearly 400 pages is divided into three parts, the first being subdivided into three sections, the second into four sections and the third comprising a single section. Part first opens with section D, which relates to Tinners' Tools and Machines. It is impossible to give any complete account of the various appliances illustrated. Suffice it to say that the goods include Folders, Groovers, Turning and Burring Machines, Seaming Machines, Beading Machines, Crimping Machines, Roll Formers, Power Rolls, Crimping Rolls, Pan Machines, Shears, Wrenches, Punches, Dividers, Solder Coppers, Drills, Tinners' Stakes, Vises, Shears, Fire-Pots, Circular Shears, &c. This first section covers 140 pages. Section E, which follows, runs from page 141 to 162, and relates to Power Squaring, Circle and Slitting Shears. These machines, of various designs and capacities, are all illustrated, and like the other goods in the catalogue, are fully described and tables of dimensions and prices are given. The third division of Part 1, known as section F, covers pages 164 to 183, and relates to Wire Straightening and Cutting Machinery of various kinds and sizes, together with descriptions. Part second is divided into sections G, H, I and J. The first relates to Power Presses, which are illustrated and described in pages 186 to 226. The second division, pages 227 to 258 relates to Foot Presses, and especial attention is directed to their latest improved Foot Lever and Pendulum Screw Presses. They also note their new line of Drop Presses, the cheapness and excellence of which are especially mentioned. Section I, page 260 to 268, refers to various special machines, while Dies of all kinds are illustrated and described in Section J, which occupies the next 12 pages. Part third concludes the book and is taken up with Canning-Factory Machinery and Appliances, &c. An interesting feature are the estimates for outfits of factories of different sizes, given at the close of the section. There is also a good deal of general information in this connection which will be useful to canners who are beginning business.

The Peck, Stow & Wilcox Company, of Southington, Conn., with warehouse and salesroom 27 Chambers street, New York City, have issued a handsome illustrated catalogue and price-list of 500 pages, 8 x 11 inches in size, substantially bound in a dark-colored pebbled cloth. The cover has no useless decoration, but is at the same time handsome and serviceable. The last edition of this catalogue was issued in 1885, and in the present volume it will be noticed that many articles heretofore described have been omitted, and that also several new designs of others have been added. The Peck, Stow & Wilcox Company, in a brief introduction, to which they give the felicitous title of "Nota Bene," call attention to the fact that in some instances the numbers have been changed, and more frequently the list prices, the latter being necessary so that they might secure more uniform discounts. All standard lists, however, have been retained. There are no sectional divisions in the catalogue, the index being arranged alphabetically and making reference to page numbers. An estimate of the large variety of goods enumerated can be gathered from the fact that the index alone occupies 10 pages. Although there are no chapters in the book, the goods are carefully classified. According to the discount sheet which accompanies the catalogue, the first 119 pages are devoted specially to Tinners' Tools and Machines, the goods following being Tinners' Hardware, and the third class of goods being General Hardware. Under Tinners' Tools and Machines are illustrated and described Folding Machines, Grooving Machines, Beading, Seaming, Fluting, Forming Machines, Folders, Gutter Machines, Squaring Shears, Tinners' Stakes, Punches and a variety of other goods. Tinners' Hardware is the subject of 60 pages, and includes Kettle Ears, Clips, Handles, Fireplace Sets of Shovel, Tongs and Pokers, with Stands, Kitchen Sets, Blower Stands, Andirons, Match Safes, all of which are made in a variety of styles and patterns. The portion of the catalogue devoted to General Hardware is by far the larger part, about 325 pages being occupied with illustrations and lists, with descriptive particulars of some of the Hardware articles forming part of the manufactures of this concern. Beginning with Hand Mills, Steel Squares, Wrenches, Hatchets, Calipers, Chisels, Drawing Knives and other Carpenters' Tools are taken up in the order named. Hammers, Pruning Shears, Clamps, Cutters and Bells come next, and are followed by an extensive variety of Bolts, Fasteners and Catches for doors and windows. Along with these goods are Sash Lifts, Pulleys, Draw Bolts and Handles. Next come Coat Hooks of all sorts, together with other hooks for special purposes. Hinges and Brackets, with various miscellaneous goods, including Bolts, complete the volume.

The following discount sheet, which we print entire, accompanies the volume:

Tinners' Tools and Machines.

Page in 1890 catalogue.	Discount per cent.
17-21, Stow's Patent Folders	A Net.
22, 23, Grooving Machines	A Net.
24-29, Stow's Patent Encased Machines	A Net.
29, Stow's Improved Standards	A Net.
30-35, Raymond's Patent Machines	A Net.
35, Raymond's Machine Standards	A Net.
36-41, No. 1 Machines	A Net.
41, No. 1 Machine Standards	A Net.
42, Jone's Rim Machine	A Net.
43, Tucking Machine	A 10
44, Stove Pipe Crimper and Beader	A 10⅓
45, Crimping Machines	A 5
46, Notching Machine	A 5
47-49, Beading Machines	A 5
50, 51, Moore's Double Seamers	A Net.
52, 53, Stow's Double Seamers	A 5
54, 55, Olmsted's Double Seamers	A 20
56, Hulbert's Double Seamers	A 20
57, Burton's Double Seamers	A 5
58, Stove-Pipe Formers, Nos. 1, 2, 100, 300, 01.	A 20
58, Tin-Pipe Formers, Nos. 1, 2, 101, 102	A 20
58, Stove-Pipe Formers, Nos. 0½, 0, 0100	A 5
58, Tin-Pipe Formers, No. 5	A 5
59-64, Forming Machines	A 5
65, Can Top Folder	A 5
65, Boiler Expander	A 5
66-68, Tube Formers	A 5
69-71, Sheet-Iron Folding Machines	A 5
72, Patent and Improved Gutter Machines	A 5
73, Gutter Beaders and Rods	A 20
74-80, Squaring Shears	A 15

81, Lowe's Parallel and Beveling Shears..A Net.
82, 83, Combined Bench and Slitting Shears. A 20
84–86, Circular Shears..... A 5
87, Waugh's Circular Shears..... A 10
87, Shear and Punch..... A 10
88, Sampson Punch..... A 10
89–92, Bench Shears and Snips..... A 20
93, Shear Holder and Bench Plates..... A 20
94, Hammers..... A 30
95, Stow's Stake Holder..... A 20
96–101, Set of Tools and Tinners' Stakes.... A 20
102, Swedges..... A 20
103, Square Pan Machines..... A 5
104, Solid Punches..... A 50
104, Hollow Punches..... A 20
105, Tinners' Rivet Sets and Chisels..... A 60
105, Cast Steel Rivet Sets..... A 70
106, Hand Groovers..... A 20
106, Tinners' Awls and Cutting Nipper.. A 20
107, Roofing Tongs..... A 20
107, Reese's Patent Roofing Tongs..... A Net.
108, Roofing Tools..... A 20
109, Kenney's Double Seamer..... A Net.
110, Star Double Seamer..... A Net.
111, Burritt's Double Seamer..... A Net.
111, Burritt's Cross Lock Seamer..... A Net.
112, Cornice Brake..... A Net.
113, Metal Beading Machine..... A 10
115, Beil's Edger..... A Net.
115, Machine Parts..... A "
116, Wire Gauges..... 10
117, Tinner's Bevel and Rule..... 25
118, Candlesticks..... 25
118, Flue Stops..... 33⅓&5
119, Parallel Vise..... Net.

Tinners' Hardware.

120, Tinners' Fire Pots..... 25
121, Soldering Coppers, subject to change..... 25
121, Soldering Pan and Gas Furnace..... 25
122, Handles, Mallets, Melting Ladles..... 25
123, Malleable Kettle Ears..... 16⅔
124, Kettle and Tea-Kettle Ears..... 40&5
125, Malleable Ears and Clips..... 25
126, Globe Coffee Roasters..... Net.
126, Boiler Handles and Clips..... 40
127, Tea-Pot Handles..... 33⅓&5
128, Paste Jaggers and Sad Stands..... 16⅔
129, Coffee-Pot Stands..... 16⅔
130, 131, Coal Tongs..... 25
132, Stove-Cover Lifters..... 16⅔
133–135, Stove Pokers..... 50
136, Coal Shovels..... 30
137–143, Shovels, Tongs and Pokers..... 50&5
144–147, Shovel and Tong Stands..... 50
148–157, Fire and Kitchen Sets..... 55&5
150, 151, Read Nos. 38, 138, 238, English Bronze in place of Electro-Bronze Plated
158, 159, Blower Stands..... 55
160, 162, Fire Dogs..... 50
163–171, Brass Andirons..... 50
172, Umbrella Stands..... 33⅓
173–179, Match Safes..... 33⅓

General Hardware.

180–191, Coffee and Spice Mills..... 40
192, 193, Steel and Iron Squares..... 70
194, Crenelated Steel Squares..... 70
194, Shingling Bracket and Clapboard Gauge .10
196, Robinson's Wrenches..... 33⅓&5
196, Add Robinson's Wrenches Blued, same list as Black..... 25
196, Machinists' Wrenches..... 60
197, Agricultural and Hayden's Wrenches.. 66⅔
198, Cast-Steel Nail Hammers..... 10&5
199, Farriers' Hammers..... 10
199, Riveting and Machinists' Hammers..... 10
200, Cast Nail Hammers..... 16⅔
200, Blacksmith's Steel Hammers..... 10
201, Hatchets and Axes..... 16⅔
202, 203, Cast Steel Hatchets..... 25
204, Bush Hooks..... 16⅔
205, Butchers' Cleavers..... 10&5
205, Corn Hooks..... 16⅔
206, 207, Cast-Steel Calipers..... 50
208, Cast-Steel Pliers..... 33⅓
208, Carpenters' Pincers..... 50
209, Cast-Steel Dividers..... 60
209, Compasses and Saddlers' Punches..... 50
209, Add No. 14 Saddlers' Punch—½-inch hole. List, per dozen, $5.25.
210–212, Chisels and Slicks..... 66⅔
210–212, Add extra for Beveled-Edged Chisels, per dozen, $1..... Net.
213, Chisels and Gouges..... 20
214, Tanged Firmer Chisels and Gouges.... 10&10
214, Socket Firmer Gouges..... 25
215, " Paring Gouges..... 16⅔
215, " Firmer Chisels, in fancy box..... 5
216, 217, Drawing Knives..... 66⅔
218, 219, Auger and Car Bits..... 60
219, Assorted Bits, in fancy boxes..... 50
220, 221, Bit Braces..... 50&5
222, 223, Handles..... 70&10
224, 225, Breast and Ratchet Drills..... 33⅓
226, Cold Chisels..... 60
226, 227, Screw Drivers..... 60
227, Rachet Braces and Bits, in fancy box..... 30
228, Box and Plumbers' Scrapers..... 33⅓
228, " Chisels..... Net.
229, " " 10
229, " Hooks..... 40
230, Cheese and Butter Triers..... 16⅔
230, Saw Rods..... 33⅓
230, 231, Saw Sets..... 16⅔
232, 233, Scratch Awls, Ice Picks and Axes..... 25
234, Carpet Stretchers and Tack Claws..... 25
235, " Hammers..... 25
235, Tack Hammers, Nos. 5, 6..... 16⅔
235, Household Favorite..... 16⅔
236, Steak and Shoe Hammers..... 25
237, Nut Cracks..... 25
238, Pruning Shears..... 16⅔
239, Garden Forks and Trowels..... 25
240, Shoe Pincers and Hoof Nippers..... 25
241, Blacksmiths' Butterises and Drills..... 25
241, Carpenters' Door Clamps..... 25
242, 243, Cabinet and Carriage Clamps..... 25
244, Steel Traps..... 60&5
245, Bench and Jack Screws..... 33⅓
246, Vises..... 16⅔
247, Tea Scales..... 16⅔
248, Spring Balances..... Net.
248, Scale Beams..... 33⅓
249, Steelyards..... 16⅔&5
250, 251, Little Giant Meat Cutters..... 33⅓
252, Woodruff's Meat Cutter..... 10&5
253, Hale's " " 55
254, Dixon's " " ..... 10&5
254, Sausage Fillers..... 25&5
255, Tobacco Cutters..... 16⅔
256, Ox Bow Pins..... 33⅓
257, Cattle Leaders and Bull Rings..... 33⅓
258, Hitching Rings..... 40
258, Hog Scrapers..... 33⅓
259, Ox Balls..... 33⅓&5
260, 261, Electic Bells..... 33⅓
262, 263, Centric " 33⅓
263–269, Bells and Bell Levers..... 16⅔
270–273, Thumb Latch Bells..... 25
274, 275, Trip Gong and Alarm Bells..... 10
276, 277, House Bells on Carriages..... 10
278, 279, Slide Beil Pulls and Bell Cranks..... 10
280, Bell Cranks, Spikes and Springs..... 10
281–285, Call and Hotel Bells..... 25
286–292, Casters..... 40&10
293, Cast Tower and Barrel Bolts..... 40&5
293, 294, Wrought Iron Barrel Bolts..... 66⅔
295, 296, Cast Barrel Bolts..... 33⅓
296, 297, Cast Brass Barrel Bolts..... 33⅓
298, 299, Wrought Iron Bolts..... 60
300, 301, Steel Spring Square Bolts..... 40
302, Cast Brass Square Spring Bolts..... 33⅓
303, Square Necked Bolts..... 40
304, Mortise and Lever Bolts..... 33⅓
304, Flat Shutter Bolts..... 33⅓
305–308, Flush Bolts..... 40
309, 310, Cast Brass Flush Bolts..... 16⅔&5
311–313, Chain Door Fasteners..... 25
314, Japanned Chain Bolts..... 33⅓
315, 316, Chain Bolts..... 25
317, Bottom Bolts..... 25
318, 319, Spring Foot Bolts..... 25
320, Flat Cupboard Bolts..... 40
321, Cupboard and Ship Bolts..... 33⅓
321, Brass Slow-Case Catches..... 33⅓
322, 323, Brass Cupboard Catches..... 20
324–327, Cupboard Catches..... 33⅓
328, 329, French Window Catches..... 33⅓
330–332, Cupboard Turns..... 33⅓
333, Screen-Door Catches..... 40
334, Transom Catches..... 33⅓
334, 335, Door Buttons, on Plates..... 25
336, Door Buttons..... 33⅓
337–343, Sash Fasteners..... 25
344, 345, Shutter Bars..... 33⅓
346–348, Sash Lifts..... 33⅓
349 Sash Pulls and Plates..... 33⅓
349, 350, Shutter Lifts and Knobs..... 33⅓
350, Stubs and Plates and Shutter Screws .. 33⅓
351, Sash Cord Irons..... 16⅔
351, Sash Centers..... 33⅓
352, Window Spring Bolts and Sockets..... 16⅔
353, Sash Props..... 33⅓
353, 354, Trunk and Sash Rollers..... 33⅓
355, Hay Fork Pulleys..... 16⅔
356, 357, Frame Pulleys..... 25
357, Dumb Waiter Pulleys..... 25
358, 359, Screw and Side Pulleys..... 33⅓
360, 361, Clothes Line Pulleys..... 16⅔
362, 363, Tackle or Awning Pulleys..... 33⅓
364, Hot-house Pulleys..... 33⅓
365, Sliding and Shutter Sheaves..... 25
365, Encased Swivel Pulleys..... 33⅓
366, Upright Pulleys..... 25
366, Well Wheels..... 25
367–377, Drawer Pulls..... 16⅔
378, 379, Card Frames..... 33⅓
380, Book and Card Racks..... 40
381, Flush Rings and Lifting Handles..... 40
382, Cast Brass Lifting Handles..... 40
383, Japanned Lifting Handles..... 40
383, Wrought Chest Handles..... 50&5
384–388, Chest Handles..... 40
389, French Shutter Handles..... 33⅓
390, Trap-door Rings..... 40&5
390, 391, Letter-box Plates..... 40
392, Thread Escutcheons..... 25
392, Door Knobs..... 50
393–401, Store-door Handles..... 16⅔&5
401, Cottage Latches..... 16⅔&5
402, Roggin's and Thumb Latches..... 16⅔
403, Barn-door Bolt and Catch..... 16⅔&5
404–406, Barn-door Latches and Pulls..... 25
407–409, Door Pulls..... 25
410–428, Hat and Coat and Wardrobe Hooks.. 25
429–431, School-house Hooks..... 25
431–433, Clothes-line Hooks..... 25
434, 435, Harness Hooks..... 25
436–440, Chandelier Hooks..... 25
441, Ceiling Hooks..... 25
442, Lamp and Cabin-Door Hooks..... 33⅓
443, Screw and Drive Hooks..... 10
443, Cup and Molding Hooks..... 33⅓
444, 445, Hammock Hooks..... 25
446–450, Bird-cage Hooks..... 25
451, Boot Jacks..... 25
452, 453, Foot Scrapers..... 25
453, Kitchen Grindstones..... 10&5
454, Grindstone Fixtures..... 16⅔
455–457, Strap and T Hinges..... A75
458, Plate and Screw-Hook Hinges..... 16⅔
459, Inside Shutter Hinges and Parliament Butts..... 25
460, 461, Ratchet Spring Hinges..... 16⅔
462, 463, Loose Pin Butts..... 55&5
464, Loose Pin Butts..... 80
465, Gate Latches and Hinges..... 33⅓
466, 467, Barn-door Hangers..... 40
467, 468, Barn-door Stays and Rollers..... 40
468, Sliding-door Sheaves..... 40
469, Barn and Sliding-door Rail..... 33⅓
470, Towel Rollers..... 16⅔
470, Plumb Bobs..... 16⅔
471–473, Shelf Brackets..... 33⅓&5
474–491, Flower Pot and Lamp Brackets.... 33⅓
492, 493, Twine Boxes..... 33⅓
494–497, Paper Files and Clips..... 33⅓
498, Common Carriage Bolts..... A70&12½
499, Phila. Pattern Carriage Bolts..... A75&10
500, Genuine Philadelphia Bolts..... A75&5
501, Carriage Knobs..... 40
502, 503, Curry Combs..... 33⅓
504, Whip Sockets and Cockeyes..... 25

The Rice Tinware Company, Kansas City, Mo., are closing out all goods not of their own manufacture, and will hereafter give their attention exclusively to the manufacture of Pieced Tinware and Sheet Metal Goods. They offer the following goods, subject to stock and prior sale:

Jelly Cake Pans, inches				9		10
Shallow, per dozen				$0.25		.31
Deep, per dozen				.33		....
Pie Plates, inches			6	7		10
Common, per dozen			$0.13	.17		.31
Deep, per dozen						.36
Mountain Cake Pans, inches				9		10
Per dozen				$0.36		.42
Plain Round Patties, per gross						$0.90
Deep Scalloped Patties, per gross						.60
6-inch Milk Skimmers, pierced, per dozen						.16
Stove Pipe Rings, inches			5	6		7
Per dozen			$0.16	.20		.22
Zinc Stove Pipe Rings, inches						7
Per dozen						$0.50
Wash Basins, Nos.	6	6½	7½			8
Retinned	$0.59	.66	.85			.96
Wash Basins, No.						14
I X Retinned						$0 90
Wash Basins, with feet, Nos.				0 10		0 20
Plain, per dozen				$0.61		.71
Retinned, per dozen				.86		.95
Retinned Dish Pans, qts.	8	10	14	17		21
1 X per dozen	$1.88	2 06	3.00			..
1 XXX, per dozen			3.51			5.26
Deep Pudding Pans, qts.	2	3	4	5		6
Plain, I X, per doz.	$0.54	..	.76	.89		.99
Retinned, I.C., per dz.	.63	.76	.85	.99		1.06
" I.X., "	.70	.83	.95	1.08		1.22
Retinned Sauce Pans, Nos.	0 8	0 10	0 12	0 14		0 16
Per dozen	$0.40	.52	.61	.74		.87
Retinned Sauce Pans, Nos.	0 18	0 20	0 24	0 26		0 28
Per dozen	$1 02	1.17	1.78	2.06		
Retinned Preserving Kettles, Nos.	180	200	260			
Per dozen	$1.13	1.22	1.88			
Milk Pans, Quarts	½	1	1½	2		3
Plain, per doz.	$0.20	..	.29	.32		...
Retinned	$0 31	.39	.43	.48		.56
Milk Pans, Quarts	5	6	8	10		12
Retinned	$0.85	.94	1.06	1.24		1.41
Stamped Water Dippers, Pts.	½	1	Qts.	1	3	
Plain, per doz.	$0.25	..		..	..	
Retinned	.33	.39		.48	.71	
Family, IXXX, 2 quarts, per doz					$1.50	
Flaring Cup Dippers, Nos	10	11	17			
Per dozen	$0.57	.66	.66			
Retinned Cups	½ pt.	No. 3,	Teamsters.	No. 0	11	
Per doz.	$0.29	.33		.45		
Cullenders, Feet Fast, Nos.	104	205	306			
Per doz.	$1.08	1.22	1 41			
Turban Cake Molds, Quarts		3	5			
Per dozen		$1.22	1.54			
Turk's Head Cake Molds, Quarts			4			
Per dozen			$1.69			
Cake Turners, Threaded handled, Nos.	15	16				
Flat handled, Nos	13	14				
Per dozen	$0.35	.43				
Cake Turners, Wood handled, Nos	17	18				
Per dozen	$0.57	.63				
Flesh Forks, Inches	13	15				
Two prong, per dozen	$0.30	.32				
Three " "	.32	.35				
Retinned Soup Ladles, Nos.	139	38	39			
Per dozen	$0.35	.41	.45			
Deep Ladles, flat handled, Nos.	9	11	13	14		
Threaded, handled, Nos.	15	17	19	..		
Pierced, per dozen	$0.50	.59	.78	.45		
Plain, "	.48	.57	.76	..		
Wood Handle Soup Ladles, Nos.	29	30				
Per dozen	$0.54	.61				
Muffin Pans, cups	6	8	12			
Per dozen	$0.95	1.25	1.80			
Corn Cake Pans, cups	8	12				
Per dozen	$1.50	2.00				
Turk's Head Muffin Pans, cups	6	8	12			
Per dozen	$1.25	1.50	2.00			
Flat Handled Skimmers, No.			14			
Per dozen			$0.61			
Milk Strainers, inches		9½	10½			
Plain, per dozen		$0.80	.90			
Retinned, "		1.08	1.26			
Spice Scoops, per dozen			$0.29			
Grocer's Scoops, tin handle, per dozen			1.46			
" " wood " "			2.25			

To parties who prefer to buy from list and discount we will give 75 and 10 per cent. discount from the list commonly used.

Heavy Retinned Tea Spoons, per gross				$1.65
" " Table " "				3.00
Japanned Plunge Bath Tubs, each				4.50
" Cash Boxes, inches		9½		11½
Each		$0.48		.53
" Tea and Coffee Canisters, lbs.	1	2		4
Japanned, per dozen	$0.65	.85		....
Crystallized, "	0.70	.95		1.55
" Dredge or Flour Boxes, per doz.				.30
" House Banks, large, per dozen				.32
" Daisy Match Safes, per dozen				.40
Syrup Pitchers, Crystallized, Pts.	1			2
Per dozen	$0.95			1.15
Japanned Toy Cups, per dozen				.16
Red Japanned Tea Trays, 18 inch, per doz.				1.35
Japanned Daisy Mugs, per dozen				.36
" Unique Dust Pans, per dozen				1.75
Wire Dish Covers, per set				.28
Square Corn Poppers, large, per dozen				1.50
Spoon Egg Beaters, Plain, per dozen				.27
" " " Black handle, per dozen				.38
Wire Tea-Pot Stands, per dozen				.75
Vegetable Boilers, No. 3, per dozen				1.10
Wire Mounted Glass Plates "				.80
" " " Baskets "				1.90
" Vegetable Ladles, Black Handles, per dozen				.60
6-inch American Dumpers, per dozen				.80
Dover Egg Beaters "				1.60
P. D. & Co. " "				1.35
Japanned Side and Dash Lanterns, per dozen				7.00
Dietz', No. 0, Tubular Lanterns, per dozen				4.15

No. 0, Lantern Globes.	Plain.	Bull's Eye.		
Per dozen	$0.50	.95		
One Blade Mincing Knives, per dozen				.38
Covered Glass Oil Cans, one gallon, per dozen				2.75
20-inch Stove Pokers, per dozen				.45
Coppered Coffee-Pot Stands, per dozen				.23
" Sad-Iron Stands "				.33
Tinned Iron Lemon Squeezers.	Large.	Small.		
Per dozen	$2.10	.95		
Iron Tack Hammers, per dozen				$0.24
Wood Handled Tack Hammers, per dozen				.43
Honest Count Tacks, 500 Tacks in a paper, per box of six dozen papers				3.15
No. 2 Sun Hinge Lamp Burners, per dozen.				1.15
Nickel Pocket Match Boxes, "				.55
Wood Handle Ice Picks, "				.38
Woodward's Combination Pliars, "				.70
14-Quart Galvanized Well Buckets, "				3.75
Japanned Coal Hods, inches.	15	17	18	
Per dozen	$1.95	2.25	2.70	
Tin Rim Flour Sieves, No. 18, per dozen				1.45
Star Thimble or Wall Safe, 4 to 8 inches, per dozen				4.10
Star Thimble or Wall Safe, 6 to 12 inches, per dozen				4.40
1¼ in. Enameled Handle Screw Drivers, per dozen				.20
Animal Cake Cutters, per dozen				.40
Fancy " " "				.22
Stove Shovels, Nos.	55	56	155	65
Per dozen	$0.54	.57	.80	.97
2-pint Octagon Tea Pots, per dozen				1.15
Copper Bowl Bottom Tea Pots, pts.	2	3	6	
Per dozen	$1.85	2.00		2.75
Doughnut Cutters, per dozen				.20
1-pt. Oval Mowing Machine Oilers, per doz.				.75
Toy Rattles and Whistles, per dozen				.11
No. 7 Planished Copper Tea Kettles, each				.87
7-inch Copper Range Kettles, each				.55
6-inch Nickel " " "				.70
1-Quart Pieced Milk Kettles, per dozen				.84
Pieced Cullenders, per dozen				.88
10-puart Pieced Dish Pans, per dozen				1.25
12 " " " " "				1.85
Biscuit Cutters, per dozen				.15

Henry W. Peaboody & Co., 58 New street, New York, and 70 Kilby street, Boston, announce that the bark Jennie Parker will have prompt dispatch from pier 10, East River, New York, for Adelaide, South Australia. They request early advices from intending shippers.

Obituary.

L. M. Rumsey Mfg. Company, under date March 31 gracefully announce the death of Eugene J. O'Neil, which occurred on the morning of the preceding day. The deceased has been suffering for about six months from tumor of the stomach, and after having tried every other means known to the medical profession a surgical operation was performed and the tumor removed, with the fatal result noted above. Mr. O'Neil had taken an active part in the management of the business of the company, and they attribute much of their present prosperity to his ability and faithfulness.

Vapor Stove Litigation.

A few weeks since we called the attention of our readers to a suit brought by the consolidated Vapor Stove Company, of Cleveland, to restrain the Schneider & Trenkamp Company, also of that city, from selling vapor stoves at a lower price than that adopted by the Vapor Stove Manufacturers' Association. The plaintiffs secured a restraining order to this effect, upon which the defendants filed a motion to dissolve the injunction. A week or two since the motion was argued at considerable length before Judge Solders of the Court of Common Pleas, who on March 21, rendered a decision granting the motion to dissolve the restraining order.

In granting the motion Judge Solders said:

"This cause is before the court upon a motion to dissolve the restraining order. The defendants contend:

"The contract sought to be enforced negatively by injunction is void, the same being in restraint of trade and against public policy, that its sole object is to restrict production and enhance prices.

"2. That the plaintiff can have no relief because by the contract it has provided its remedy to be by forfeiture.

"3. There was no meeting in August, 1889, according to requirements of the contract; that meeting held was simply one of business consultation.

"4. The plaintiff has no pecuniary or other interest, that its only interest is the collection of royalties."

THE PLAINTIFF'S POSITION.

Judge Solders then stated the position of the plaintiff, which in effect was that the object of the contract was to protect itself as the owner of the patents and to prevent ruinous competition between its licensees; that the grant by the Government to a patentee is to use, manufacture and sell, hence he has a monopoly of the thing patented for the term of the patent, and can sell or authorize its use upon any terms and subject to any coditions and restrictions; and that the prices of vapor stoves are not unreasonable. It is further claimed by the plaintiff that its interests require the inforcement of this contract, because if any one violates it the other licensees claim a right to refuse payment of royalties, and should the plaintiff forfeit the contract of any one or all, he may not be enabled to make as advantageous contracts as those already made. The performance by all of their contracts promotes their prosperity and enables them to promptly pay royalties. Competition would result in the weaker being driven to the wall. Judge Solders then said:

"I will generally examine these claims and first as to the facts upon which they arise. It appears that prior to September 13, 1884, various parties were manufacturing and selling vapor stoves, in which under letters patent various inventions were used, possibly improvements upon some original patent, and that infringement litigation resulted. The plaintiff was organized for a special purpose. I infer some persons among the manufacturers of said stoves conceived, for various reasons, the idea of a combine and plaintiff obtained a charter, and thereby corporate capacity that as a part of the plan of concentration of interests and to control the vapor stove business in the United States. On September 13, 1884, the defendants transferred their two patents to plaintiff and 13 others did the same, all cognizant of the real purpose of such transfers, the plaintiff then granting defendants the right to use their said patent and manufacture and sell thereunder the same vapor burners, as they had previously done, upon paying a royalty of 25 cents, but plaintiff receipting in full for 20 cents, or four-fifths of the stipulated royalty, licensing defendants and others by the provisions of the contract. Defendants and licensees were to make a report of the extent of their products on the 1st of January, May and September, and if one-third of plaintiff's licensees desire to establish rules, regulations and fixed prices for the manufacture and sale of vapor stoves plaintiff, upon ten days' notice, shall call a meeting of its licensees, giving the latter 30 days' notice, and a majority of such meeting may adopt rules, regulations and prices, and the same shall be binding upon plaintiff and its licensees until they are so changed. All licensees subsequent to September 13, 1884, shall be bound by these provisions. Plaintiff upon notice of four licensees, upon satisfactory proof of any breach of said contract by any licensee, shall revoke and cancel the license of such person. By the acceptance the licensee agrees he will not make or sell "burners" in violation of the contract, and will give plaintiff his or their cooperation in maintaining the vapor stove trade and the above patents. All these acts and issuing of licenses to these various parties were contemporaneous on September 13, 1884. October 1, 1888, all the licensees signed a new contract called the modifying contract and started out by declaring that they, the licensees, deemed it for their interests that plaintiff shall not hereafter grant licenses to others and not increase its present licensees; that infringements be prosecuted and license conditions be rigidly enforced, and it is agreed that a litigation committee of four be chosen and in a certain event be enlarged to five, and if said four cannot agree upon the fifth member a judge of the United States circuit or district judge of the Seventh judicial district shall appoint such member; and provides that if a licensee surrender his license with written consent of plaintiff no new license shall be granted in its stead. For violation of this contract he may forfeit his license. If plaintiff fail to prosecute as provided, the litigation committee shall do so. This is the substance of the contracts."

LEGAL ASPECTS OF THE CASE.

The rest of the decision was taken up in the consideration of dry legal questions and the citation of authorities until the close, when Judge Solders, deciding for the Schneider & Trenkamp Company, said:

"What was and is the object of the acts of these parties, plaintiffs, defendants and other licensees, on September 13, 1884, the date of the contract? It cannot be denied that much skill is manifested in the conception and specification of this combine. Nowadays the ingenuity and skill of men are employed in devising schemes for the rapid accumulation of wealth by means of trusts and combinations regardless of the fairness of the means employed to accomplish such purpose. In the mad race of acquisition the individual conscience becomes blunted and the sole object is to acquire absolute dominion over some product or line of trade necessary to the public; beneficial to the few at the expense of the many. The parties combined for monopolistic purposes to control the vapor stove trade of the United States—not only to control the thing patented, the burner, but everything connected with or incidental to a vapor stove, whether a necesssry part of such stove or not. The price-list was adopted by the Vapor Stove Manufacturers' Association of the United States at St. Clair Springs, Mich., August 14 and 15, 1889, the association regulated prices on burners with attachments, regulating next railroad freights to various and numerous points in the United States. It will thus be noticed that the association was not engaged in regulating the price of subjects matter of these patents, but anything and everything that in anywise pertained to the vapor stove trade. If it be conceded that plaintiff's contracts were valid so far as binding its licensees to the prices fixed upon the patented article, yet a contract beyond this like the one here would clearly fall within the other cases already decided and the contract must be taken as a whole. But even if such a combination restrict by contract its licensees to certain prices as to the patented thing; if its sole purpose is a complete monopoly of a line of trade in the United States as distinguished from the individual monopoly granted the patentee upon and of his invention, would such a contract be valid? The fair intent of the United States in rewarding skill and ingenuity manifested in subjects of patents by the grant is to give the patentee and his assigns a monopoly to use and dispose of his invention or discovery in such manner as may best serve his interests, and he may restrtct the sale thereof as to time, place and territory. Is not this the extent of his rights and all that was ever contemplated by the Government? Can he now go further and from beginning to end manipulate, construct and concentrate, not to dispose of his individual right, but obtain all others, valid or not, and have all claimants of patents join to create an artificial being,

subject to the control of all of said parties, as evidenced by the contract of October 1, 1888? Where the licensees deem it for their interests that their creature, the plaintiff, shall grant no more licenses so as to keep this monopoly in the hands of the few in whom they will vest their valid or invalid patent rights back to themselves and create an absolute monopoly to the end to obtain control of the materials used in connection with the thing patented, as well as other things not an inseparable part of the things with which the patented articles is used, but which are incidental thereto as a matter of utility and convenience; as well as to control the entire trade in stoves, including regulation of freights. It is claimed the object was to prevent ruinous competition and to protect patents. But the limitation must be observed and the agreement must not injure the public. To prevent ruinous competition was not the object of the plaintiff, defendants and others, and if it had been, the court must deal with the effect and the tendency of their undertaking in deciding its validity. Neither can the contract be said to fall within the claim that a patentee may bind himself by contract of sale or use of his patented article not to compete with or promote competition against his vendee, give his time and improvements to him and if the effect is in restraint of trade the contract is nevertheless valid, but on the principle that he may reap all the benefit possible from his invention. I have given the case the attention its importance demanded, and arrive at the conclusion that the combination and contracts are in restraint of trade and against public policy; therefore void. The motion to dissolve the restraining order is granted."

Selling Goods Not Carried in Stock.

A Hardwareman in one of the prominent business cities of Texas refers to the interest with which he has read in these columns the articles in regard to the selling of goods not carried in stock, and states that he has always found it well worth the time and trouble to file catalogues and price-lists of such goods in order to be in a position to make quotations and supply goods which are called for by his customers. His method of doing this he explains in the following terms, adding that he has taken considerable pains to find a practicable and convenient method:

Shelving 4 feet wide by 7 feet high is divided into, say 45 pigeon-holes, more or less, as the party may wish or his business require. These are numbered 1 to 45 in rotation. I keep an ordinary indexed price book in the first pigeon-hole. To illustrate my method: I receive the following catalogues: F. J. Meyers Mfg. Company, Sedgwick Bros., Rogers Fence Company and Springfield Agricultural Iron Works, all of whom manufacture Fences; I write the word Fences at the top of the page under index F in the index book in heavy characters. Under this the different manufacturers' names and opposite the name give the number of the pigeon-hole wherein catalogue is filed, as follows:

Fences.

F. J. Meyers Mfg. Company..... 14
Sedgwick Bros..... 14
Rogers Fence Company..... 12
Springfield Agricultural Iron Works..... 12

Before placing a catalogue in a pigeon-hole it is indexed and I write the number of the pigeon-hole on the outside of the cover in the upper right-hand corner.

For prices I have a separate set of twelve small pigeon-holes marked in alphabetical order from A to Z, where prices are filed according to the name given in the index; thus F. J. Meyers Mfg. Company under M. Sedgwick Bros. under S, &c. When a firm catalogues several lines, as the two last mentioned, who also manufacture Wire Goods, I index them under W also, thus:

Wire Goods.

F. J. Meyers Mfg. Company..... 14
Sedgwick Bros..... 14

By this means a large variety of catalogues and prices can be filed in a very limited number of pigeon-holes and still be kept so that you can find any one that you may want with ease.

A New Stove and Hardware Store.

One of the most attractive stores in Newburg, N. Y., is that of A. C. Smith & Co., in the building which has just been completed at Nos. 487 and 489 Broadway. The structure, which is 25½ x 45 feet in size and three stories in hight, was commenced in November last, the contract being held by Thomas Shaw's Sons. At the rear of the main building is the workshop, measuring 24½ x 50 feet. The store occupies the first or ground floor, and is finished in Georgia pine highly polished. The walls, ceiling, shelves, desk and railings are also of Georgia pine. The business office occupies a space in the northwest corner of the store, while in the southwest corner is the private office of Mr. Smith. This is furnished with carpeted floors, a marble mantel, upholstered Selleg chairs and a fine roll desk. The store itself is provided with a complete stock of steam fittings and plumbers' supplies. A full line of the Gorton steam and hot-water boilers also is set up for inspection. Specimens of the Boynton Furnace Company's Danube and Newport cooking ranges and Superb fireplace heater are also on exhibition. There is also a series of syphon closets, washout closets, plunger closets and pan closets, made by the Haydenville Mfg. Company, of Massachusetts. Mr. Smith is the agent for the Ideal steam radiator; and various sizes of this may be seen in actual use for heating the building. A complete outfit of all kinds of plumbers' supplies is placed upon the shelves. In the basement of the building are stored wrought-iron pipes of all sizes used in the business. The machine shop is fitted up with the latest and best devices in tools and plumbers' outfittings. A bench extends along the western side of the shop, at which the men may stand to do their work. In the center of the shop is a series of compartments in which are kept the smaller fittings, such as caps, nuts, nips and plugs. On the eastern side the machinery, consisting of lathes, cutting machines and machines for threading iron pipes, is placed. A large door opens from the shop on the Washington street side, so that trucks can approach and deliver goods to the shop without going to the store. Above the store are two flats.

Shipping Tags Bearing Business Cards.

A correspondent in Riverhead, L. I., says: I desire to ask if any of the readers of *The Iron Age* engaged in the retail trade ever noticed that all of the tags on their goods were printed with a firm's name and business? Did it ever occur to your mind, gentle readers, that these tags were detrimental to your trade? Did it ever enter your head that it was through this means that your customers found their way to the wholesale houses, and ofttimes bought goods that you should have sold them? Has it ever occurred to you how they found out the address and number of such and such a house? These are questions that should be answered. From long observation I am firmly of the opinion that it all comes from the business tag having thereon the address of some firm. I believe the sooner the tags are made blank the better it will be for the retail trade. Then when the farmer or any one else looks at the labels or tags and fails to find the address of any firm on them, he will not know where the goods come from. I have known some people to copy addresses from business tags. I am pleased to say there are some houses who use a blank tag, and it is a credit to them. These remarks are contributed in kindness, yet there is in them a great deal of truth. The retailer needs all the protection he can get. It is very trying indeed for a dealer to have a customer tell him that he can buy goods as cheaply as the dealer. I would ask the readers of *The Iron Age* to write a letter to the editor touching this question and expressing their views on the subject of shipping tags and business cards printed thereon.

Exports.

PER BARK WILLIAM PHILLIPS, MARCH 31, 1890, FOR DUNEDIN, NEW ZEALAND.

By Arkell & Douglas.—200 pounds Rivets, 9 dozen Shears, 12 gross Coat and Hat Hooks, 10 dozen Malleable Handles, 36 dozen Axe Handles, 12 dozen Meat Choppers.

By R. W. Forbes & Son.—1 case Saws, 2 cases Axes.

By R. W. Cameron & Co.—6 dozen Hammers, 2 dozen Hardware, 24 dozen Forks and Rakes, 1 case Hardware, 155 pounds Oil Stones, 3 Mangles, 9 Meat Choppers, 425 pounds Nails, 5 cases Hardware, ¼ gross Egg Beaters, 10 Stepladders, 22,395 pounds Barb Wire, 220 dozen Handles.

By F. B. Wheeler & Co.—1 case Rubber Goods, 3 barrels Rubber Hose, 24 Stoves, 155 pounds Castings, 24 dozen Wrenches, 1½ dozen Churns, 5 cases Hardware, 3 dozen Churns, 3 Forges, ½ dozen Pumps, 2 cases Hardware, 76 boxes Bits, 12 sets Axles, 5 boxes Road Wagons, 2 packages Hardware, 1 dozen Pumps, 8 sets Screw Plates, ½ dozen Churns.

By Cordley & Hayes.—38 crates and 1 case Fiberware.

By W. K. Freeman.—1876 pounds Horse Nails, 685 pounds Wringers, 223 pounds Saws, &c., 34 pounds Locks, Angles and Cutters, 1180 pounds Scales, 753 pounds Hardware, 1923 pounds Axles.

By Chas. Brewer & Co.—36 kegs Axle Grease, 34 cases Handles, 17 cases Horse Nails, 1 case Mangles, 2 cases Wringers, 4 cases Platedware, 7 packages Lampware, 1 case Flint Paper, 31 cases Tools, 15 cases Hardware, 7 packages Lampware.

By Strong & Trowbridge.—1 dozen Wringers, 3 dozen Lanterns, 2 dozen Axes, 18 dozen Hatchets, ½ dozen Hammers, 1 dozen Sad Irons, 6 dozen Glue, 2 Drills, 2 dozen Chain Bolts, 18 dozen Washboards, 2½ dozen Auger Bits, 50 pounds Hardware, 4 dozen Wrenches, 15 dozen Hammers, 30 dozen Nails, 26 dozen Strainers, 9 dozen Levels, 8 dozen Rules, 3 dozen Hoes, 2½ dozen Stoves, 12 dozen Locks, 1 dozen Carpet Sweepers, 6 dozen Egg Beaters, 5 dozen Grindstone Fixtures, 26 Stoves, 1 dozen Axle Clips, ½ dozen Apple Parers, 6 dozen Mattocks, 5300 Bolts, 1 dozen King Bolts, 5 dozen Manure Forks, 6 dozen Choppers, 3 dozen Sad Irons, 4 dozen Pruning Shears, 1 dozen Seed Sowers, 900 feet Hose, 120 pounds Stone, 10 dozen Forks, 1 dozen Apple Parers, 8 dozen Wrenches, 4 dozen Pumps, 2 dozen Sad Irons, 40 dozen Blocks, 10 pounds Hardware.

FOR AUCKLAND.

By R. W. Forbes & Son.—1¼ dozen Meat Choppers, 30 dozen Hay Rakes, 6 gross Axle Grease, 20 dozen Snaths, 2110 pounds Horse Nails, 11 packages Stoves, 1 dozen Mangles, 2 packages Planters, 3 Packages Hardware, 3 Store Trucks, 6 packages Harrows, 1 package Hardware.

By R. W. Cameron & Co.—6 cases Axles.

By F. B. Wheeler & Co.—5 dozen Wringers.

By H. W. Peabody & Co.—59 packages Hardware, 3 packages Pumps, 1 case Tacks.

FOR DUNEDIN.

By H. W. Peabody & Co.—3 cases Hardware, 48 Churns, 560 pounds Nails, 6 dozen Forks, 18 Lawn Mowers, 6 bundles Stepladders, 1 case Forks, 3 cases Lampware, 2 cases Wireware, 25 Stoves, 4 cases Hardware, 14 Perambulators, 4 dozen Hardware, 1 case Hoes,

1 cask Pumps, 16 packages Hardware, 11 packages Stoves, 25 dozen Agricultural Implements, 8 sets Axles, 10 Lawn Mowers, 2 cases Pumps, 1 case Tacks, 9 Lawn Mowers, 18 Wringers, 1 cask Pumps, 27 dozen Handles, 8 packages Hardware, 21 dozen Agricultural Implements, 75 cases Hardware, 27 packages Hardware, 2 cases Forks, 80 dozen Handles, 15 Lawn Mowers, 1 cask Pumps, 10 rolls Flint Paper, 16 dozen Rakes, 3 Scales, 52 Churns, 6 Seed Sowers, 3 dozen Wringers, 5 cases Agateware, 12 Stoves, 11 packages Hardware, 1 case Hardware, 2 cases Hardware.

PER SHIP ANNA ALEIDA, MARCH 31, 1890, FOR SYDNEY, N. S. W.

By E. W. Harrison & Co.—3 cases Emery Wheels.
By Simpson, Hall, Miller & Co.—15 packages Plated-Ware.
By A. Field & Co.—25 Stoves.
By Hill & Hartridge.—7040 pounds Shoe Nails.
By Welsh & Lea.—6 cases Iron Bolts.
By R. H. Dana & Co.—867⅛ dozen Hardware.
By Reed & Barton.—840 pounds Plated-Ware.
By S. Oppenheimer & Co.—2750 pounds Skewers.
By J. L. Mott Iron Works.—12 packages Stoves and Parts, 1 box Enameled Iron Bath.
By A. Field & Son.—27 boxes Shoe Nails.
By C. B. Richard & Co.—380 pounds Road Carts, 80 pounds Saddlery.
By Hartley & Graham.—108,000 Cartridges, 1 case Tools.
By Winchester Repeating Arms Company.—50,000 Cartridges, 2000 Cartridge Shells.
By E. K. Alburtis.—180 dozen Axe Handles, 65 pounds Nails, 12,800 Bolts.
By J. A. Gifford.—1 case Saddlers' Tools.
By R. W. Forbes & Son.—3 packages Corn Planters, 1 box Pulleys, 6 boxes Castings, 1 box Hat Racks.
By Crane & McMahon.—16 cases Forges and 3 Tanks.
By Coombs, Crosby & Eddy.—45 dozen Carpenters' Tools, 77 pounds Hardware, 2 cases Hardware.
By W. E. Peck.—151 packages Plated-Ware, 300,000 Skewers, 51 dozen Carts.
By Strong & Trowbridge.—30 dozen Axes, 28 pounds Castings, ½ dozen Fifth Wheels, 2 Die Plates, 7 dozen Lanterns, 3 Boring Machines, 48 dozen Handles, 1 dozen Meat Choppers, ½ dozen Pumps, 22 scales, 6½ dozen Pumps, 1 Ice Cream Freezer.
By F. B. Wheeler & Co.—3 cases Electrical Goods, 4 dozen Axes, 2 dozen Picks, 2 dozen Axes, 4 cases Hardware, 1 case Hardware, 1 dozen Wagons, 1½ dozen Reflectors.
By A. S. Lascelles & Co.—2 dozen Razors, ½ dozen Velocipedes, 200 gross Pencils, 1 gross Thermometers, ½ dozen Scales, 1 case Hardware, 2 dozen Meat Cutters, 9 gross Axle Grease, 1 dozen Churns, 708 pounds Tacks, 1 gross Barometers, 22 cases Carts.
By McLean Bros. & Rigg.—3900 feet Garden Hose, 29 Cases Agateware, 40 dozen Axes, 10,000 Belt Studs, 13,000 Rivets, 100 dozen Saws, 4 dozen Meat Choppers, 12 dozen Cow Bells, 12 dozen Lemon Squeezers, 19 dozen Cow Bells, 12 sets Axels, 3 dozen Locks, 8 cases Agateware, 2 dozen Braces, 156 dozen Handles, 25 Washing Machines, 3 dozen Lawn Mowers, 1½ dozen Pumps, 13 dozen Locks, 1 dozen Axes, 3000 Bolts, 12 dozen Locks, 13,500 Bolts, 1½ dozen Lawn Mowers, 34 dozen Wrenches, 75 dozen Drills, 27 Lawn Mowers, 262 dozen Handles.
By H. W. Peabody & Co.—3 gross Traps, 1 case Hardware, 44,800 pounds Barb Wire, 1120 pounds Nails, 24 packages Hardware, 1 case Fire Arms, 1000 Shells, 7 packages Hardware, 6 cases Hardware, 36 Fire Arms, 9 cases Plows, &c., 22,400 pounds Barb Wire, 10,480 pounds Wire, 137 dozen Washboards.
By R. W. Cameron & Co.—7 boxes Machinery, 2 cases Sandpaper, 5 hogsheads Hose, 768 Handles, 170 pounds Hardware, 7 dozen Rubber Goods, 4 dozen Hatchets, 3 dozen Handled Axes, 1 gross Rat Traps, 2 dozen Picks, 2 dozen Lawn Sprinklers, 2 dozen Coffee Pots, 1 case Hardware, 13 cases Tools, 9 Lawn Mowers, 1 bundle Handles, 9 Lawn Mowers, 2 gross Traps, 9 Lawn Mowers, 1 case Hardware, 9 dozen Lemon Squeezers, 1 case Air Guns, 9 dozen Wire Goods, 9 Stoves, 2 dozen Saws, 2 dozen Wringers, 2 dozen Tills, 4 dozen Handles, 9 dozen Hammers, 9 cases Axles, 1 dozen Broad Axes, 2 boxes Castings, 9 cases Bolts, 1 case Hardware, 1 box Hardware, 1 barrel Forgings, 1 box Hardware, 1 case Wagon Jacks, 960 packages Nails, 7 cases Nuts and Bolts, 12,000 pounds Axles, 19 crates Wood Pulleys, 5 cases Machinery, 2 cases Steam Pumps, 59,909 pounds Barb Wire.
By W. H. Crossman & Brother.—2 cases Plated-Ware, 2 packages Platedware, 17 dozen Axes, 6 packages Lawn Mowers, 2 packages Lamp Goods, 7 packages Pump Parts, 1 cask Lamp Goods, 8 cases Hardware, ⅛ dozen Ladders, 24 sets Axles, 6 dozen Picks, 2 dozen Hoes, 10 dozen Snaths, 1 case Hardware, 1 dozen Plows, 1 dozen Corn Mills, 3 Corn Planters, 1 dozen Barrows, 11 dozen Forks, 1500 feet Hose, 27 Barrows, 54 Churns, 3 dozen Carpet Sweepers, 12 dozen Wrenches, 3 dozen Scoops, 2000 Handles, 4 dozen Sad Irons, 12 dozen Handles, 6¼ dozen Freezers, 2500 pounds Iron Nails, 10 cases Plated-Ware, 390 dozen Fruit Jars, 9 gross Shade Hardware, 41 cases Hardware, 18 dozen Carpenters' Tools, 12 dozen Hammers, 3 dozen Scales, 60 gross Wicks, 1 case Lamp Goods, 2 dozen Transom Lifters, 22 cases Hardware, 3600 Bolts, 2500 Handles, 6 dozen Transom Lifters, 1 dozen Adzes, 25 dozen Axes, 3 dozen Tills, 49 dozen Axes, ⅛ dozen Scales, 1½ dozen Wringers, 6 dozen Wrenches, 9 Churns, 8 cases Hardware, 4 dozen Hatchets, 72 dozen Handles, 8 dozen Picks, 2 cases Plow Parts, 1 case Cow Bells, 2 packages Lamp Goods, 8 dozen Forks, 8 dozen Corn Shellers, ⅛ dozen Churns, 1 case Pump Parts, 11 dozen Blocks, 12 cases Hardware, 2 boxes Hardware.

REVIEW OF THE WHOLESALE MARKET IN PAINTS AND OILS.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Paints and Colors.

There has been a rather better trade all along the line; no really heavy buying in any department, yet sufficient improvement to show that confidence in increased sales as soon as the weather changed was not misplaced. Orders have been particularly good from local and near-by trade, but those from more distant points made a more gratifying exhibit than did the returns during the preceding fortnight, and present appearances are favorable for a further expansion of business as the spring season advances. In nearly all lines values are characterized by steadiness, with here and there a decidedly firm undertone. Pigments and Colors in Oil are made particularly firm, owing in good part to the high cost of the latter ingredient, but the dry goods are nearly as stiff. Paris Green shows a tendency toward higher prices. Whiting is as yet unaffected by the high cost of Chalk and continues to sell at rather surprisingly low figures in some instances.

White Lead.—The demand for first quality Lead has improved considerably. Jobbers have had more numerous orders for small lots for prompt delivery, and more extensive drafts upon corroders' supplies are also reported. No disturbing influences have arisen to unsettle values, and old rates are firmly adhered to by "trust" concerns and outsiders alike. Second and third qualities have also met with freer movement, the best brands of the former that sell at about 5¼¢ @ 6¢ doing especially well. There is yet some prospect of prices for certain of those brands being advanced, but no decided move in that direction has been undertaken.

Red Lead and Litharge.—There is about the usual movement of these goods, the position of the market is unchanged, and prices remain the same as quoted for some time past.

Zincs.—American Dry Oxide is selling at the old range of prices and to a very fair extent. Large buyers secure the lowest grade at 3¾¢, but anything under 4¢ is quite the exception, and 4¼¢ @ 4½¢ are the more general figures for a reliable article. Foreign brands are firmly held at old quotations, but sell in a hand to mouth way only.

Colors.—The high cost of crude materials has operated to check production of Paris Green more or less, and the consequent reduced supply, along with the unprofitable character of the business, seems likely to result in higher prices being fixed later on when the demand becomes more urgent. Manufacturers are very indifferent about taking orders at the present time. House Painters' and Grinders' Colors generally are steady at the former line of prices and selling very fairly.

Miscellaneous.—In the absence of any considerable addition to the supply, prices for Block Chalk in bulk keeps high. Large buyers might secure stock barreled at 27½¢ @ 30¢ ₱ 100 ℔, but for ordinary lots 32¢ @ 35¢ is quoted. Whiting is without change in price and rather slow of sale; Common has been secured at 37½¢, against 40¢ @ 45¢, the general prices, and for Gilders 50¢ has become a common price.

Animal and Vegetable Oils.

The week under review has been as free from important changes as was the one preceding and the general situation is practically the same as it was a fortnight ago. It would require very nice distinction to point out where the character of the demand differs, at all events, and evidence is wanting of any new conditions or influences from which either buyer or seller can claim any decided advantage. Lard and Linseed Oil prices are still supported in a measure by the position of the market for raw materials, and advices from the primary markets sustain values here for Cocoanut and Olive Oils. Light supplies operate similarly with Sperm and Whale Oils. Nearly everything else in the Oil line is so cheap that there is no room for a decline and business is hardly brisk enough to bring about an advance in prices.

Linseed Oil.—City manufacturers adhere firmly to the prices that have ruled for several weeks past, and outside brands are not coming forward in sufficient quantities to have any effect. The high cost of seed is still an important factor and the continuation of a good steady demand is not without effect. The manufacturers' combination, however, avoids friction, if nothing more.

Cotton-Seed Oil.—Crude Oil has been in very fair demand and the market remains firm, with 28¢ a close price for prime quality. Export interest in the refined product, summer yellow particularly, has increased, and the home trade demand continues very fair also. Prices are firmly held and show a tendency to advance. Latest sales were at from 31¢ for "off grade" up to 34¢ for strictly prime summer yellow. Exports thus far this season are about 100,000 bushels ahead of those of last year, and a conspicuous increase is in the shipments to Italy.

Lard Oil.—Prime quality is very firmly held, and, owing to the condition of the market for raw material, pressers are somewhat reserved as to the quantity of Oil they will let go at present prices. The demand is very fair and has been freer than it was last week.

Fish Oils.—No movement is reported of crude Sperm or Whale Oils, and the manufactured products, being relatively dearer than competing lubricants, move rather slowly. Crude Menhaden continues to move very fairly in a quiet way, and the pressed and bleached Oils are moving off steadily at old figures.

Cocoanut, Palm and Olive Oils have undergone no change whatever. Prices are the same as quoted a week ago and the tone of the market is as firm, but spot business has continued rather slow, as has also the demand.

So far as reports have come in, the total of fatalities by the recent tornado in the Mississippi Valley will foot up to about 400. Statements of the loss of property are only of a general character, but one estimate places the amount at $4,000,000, about three-fourths of which will fall on Kentucky.

Harland's Improved Oil Can.

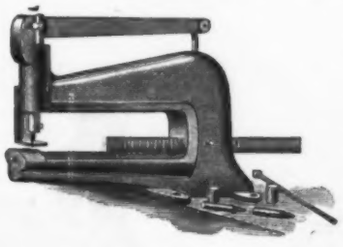
We show in the accompanying illustration a general view of what is known as Harland's Improved Gasoline, Varnish and Oil Can, and which is being placed upon the American market by Harland Bros., of Clinton, Ontario. The can is suspended in a frame of wood in such a manner that the spout is sealed automatically by pressing against a pad in the top of the case. This arrangement, it is claimed, prevents the contents of the can from evaporating, and at the same time does away with the necessity for cocks, pumps

Harland's Improved Oil Can.

and taps, the latter of which are liable to get out of order. One of the points to which the makers direct special attention is the facility with which small bottles or other vessels may be filled. From an inspection of the cut, it will be seen that there is a vent tube extending from the top of the can to near the opening of the spout, which permits of the free entrance of air to the can while its contents are being discharged, ensuring, it is claimed, an even, steady flow. The can is protected by the wooden case clearly shown in the cut, and is thus adapted for the convenient transportation of syrups, oils, varnishes, gasoline, or other liquids. It is said to be easily operated and can be obtained in five sizes.

Clough's Bench Foot Press.

In the accompanying illustration we show a new bench foot-power press for tin and sheet metal workers' use which is being placed upon the market by R. M. Clough, of Meriden, Conn. From an inspection of the engraving the reader will be able



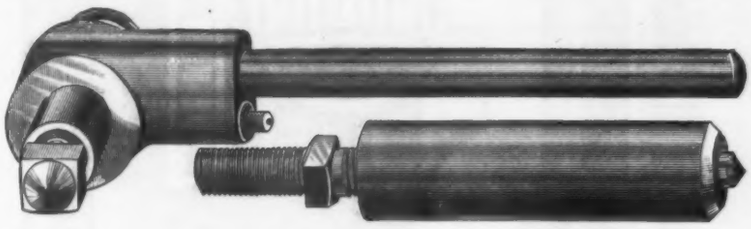
Clough's Bench Foot Press.

to form a very good idea of the general appearance of the device. It is operated by foot-power, thus leaving both hands of the operator free to assist in the execution of the work. The manufacturer states that the press is made of sufficient strength to punch No. 14 iron without bolt and No. 10 iron with bolt. Flat pieces may be punched 18 inches from the edge, or to the center of a 36-inch square. The statement is also made that 5-inch pipe can be punched 15 inches from the end. A gauge strip, three punches and dies, together with other parts to complete the outfit, are furnished with the tool. The press was designed expressly for the jobbing trade, is of first-class workmanship and is placed upon the market at a price within the reach of all.

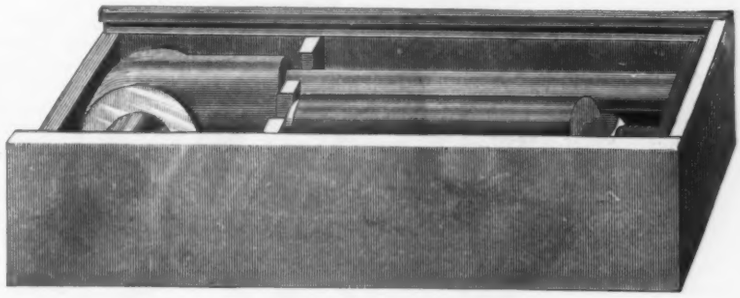
New Hardware Specialties.

We herewith present engravings of several new hardware specialties which have just been placed on the market by The Peck, Stow & Wilcox Company, of New York.

The Whitney's new combined double-acting ratchet drill stock has a socket fitted to square shank drills with Morse standard taper. It is two ratchets in one—boiler and common—at the cost of one. The advantages derived from this construction are apparent. Those who have used a short (boiler) ratchet have often wished it were longer in order to give more range with less change of blocking, while those using a common ratchet have often found it too long to be of any use. The ratchet here shown can be used as a boiler ratchet where the space is limited and by changing screw it can be used as a common ratchet and have a longer run of feeding screw than has been obtained heretofore with the same length of drill stock. It is reversible, which is convenient in light drilling to turn on and not move drill, also in getting out broken bolts and studs as well as when used as a wrench. The ratchet and socket are of one solid piece of forged steel, with no possible chance to move or split. The screws are larger than those of any other ratchet in the market, so that no hard usage can spring them. The screws are also long for length of drill stock. The ratchets are all encased, so that there is no chance for dirt to prevent the catch going to the bottom of the teeth at each movement of the lever. The parts are all duplicated, so that when worn out they can be replaced. Little space is occupied, each ratchet being complete in a substantial slide cover box. The ratchets are polished, the heads being nickel-plated.



Double-Acting Ratchet Drill Stock.



Ratchet Drill Stock in Box.

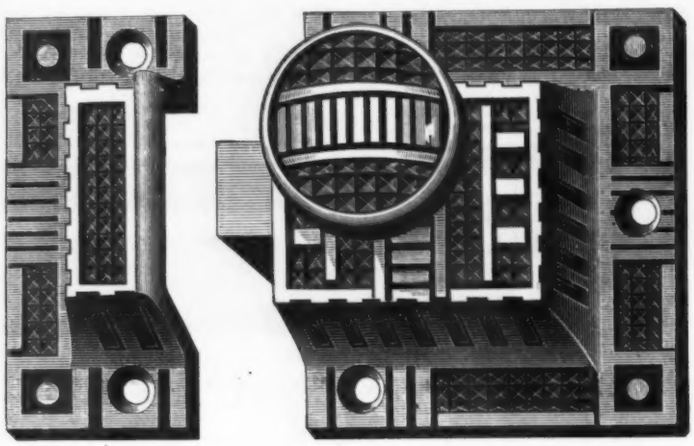
The Star carriage-maker's clamp is so arranged that the swivel is admitted into the clamp, thus utilizing the entire distance between the ends of the two arms. The head is not only screwed on to the screw, but is securely fastened by a pin passing through the head into the screw. The good points of this construction will be readily seen.

The cupboard turn and sash fastener are of new and extremely pleasing designs.

Patent "Star" Carriage Makers' Clamp.

The former are made with bronze metal and electro-plated T handles and adamantine bronzed, with bronzed metal T handles and electro-bronze plated throughout. Those with circular knobs, as shown in the engraving, are made in the same variety. The sash fasteners are made in the several sizes and with ornamentation

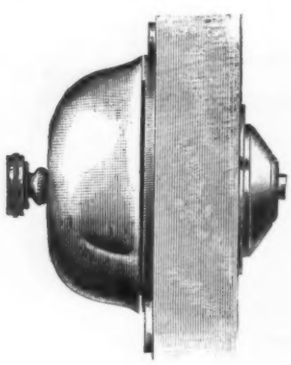
ranging from plain throughout to the specimen illustrated. They are enameled, enameled with bronze-metal lever, adamantine bronzed, adamantine bronzed with bronzed metal lever and electro-bronze plated.



Cupboard Turn.

The Centric door bell is operated in the same manner as the real electric bells. It is wound by means of the button or knob on the back of the bell and a continuous and musical sound is produced. It can be easily put up, the push button being in a direct line with the center of the bell, hence the name Centric. All that is necessary is to bore screw holes for the base, then precisely midway between the two bore a small hole for the push-pin. The push-wire is cut of just sufficient length, so that when the button springs out to its normal position the end of the wire will be even with the other side of the door.

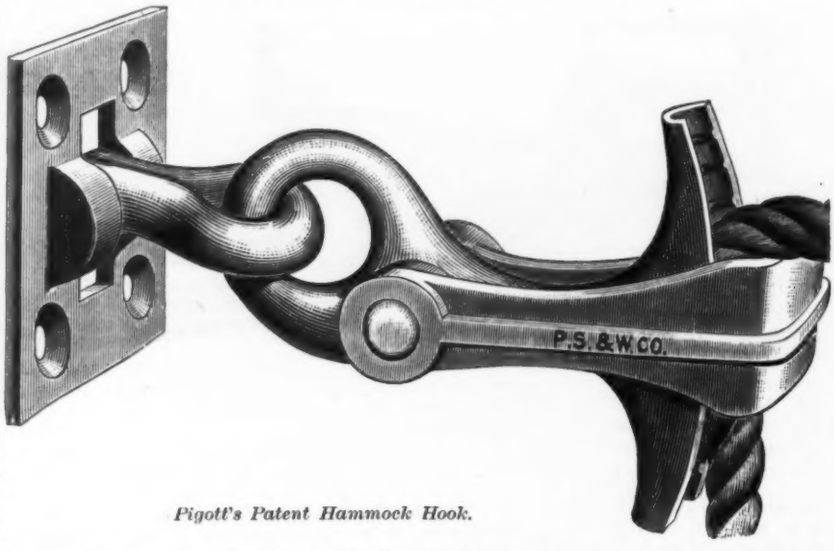
Sash Fastener.



The Centric Door Bell.

The form of the Pigott's patent hammock hook is clearly shown in the cut. It is so made that the weight holds the hammock secure and fast at any desired elevation. The heavier the weight the firmer the grip on the rope. The hammock can be easily and quickly attached without fastening or tying, and can be as easily and quickly removed. These hooks are made with a plate, to be held by screws, as shown, or with a large single screw.

A large vein of iron ore has been struck at Falls of French Creek, Chester County, by Jonathan and Josiah Keim, of Pottstown, who have been prospecting there for some time.



Pigott's Patent Hammock Hook.

The Gem Freezer Clamp.

This article is represented in the accompanying illustration, and is manufactured by the American Machine Company, Lehigh avenue and American street, Philadelphia, for whom John H. Graham & Co. are agents, 113 Chambers street, New York. As will be readily apprehended from an inspection of the cut, which shows the clamp in use, it is designed for securing an ice-cream freezer firmly in place while the operation of freezing is in progress. It will be perceived that the device consists of a pair of hooks with projections, through which are run wire rods, threaded at the upper end and furnished with thumb nuts, the lower ends of the rods terminating in hooks, which are to be attached to screw eyes. To clamp the freezer it is only necessary to put the screw eyes into the bench chair or box on which the freezer is usually placed, one on each side of the freezer and about 1 inch or 2 inches away from it. The wire rods are then hooked into the screw eyes and the hooks laid over the edge of the pail, when by the application of the thumb nut the freezer may be securely held in place. The rapidity with which the clamping of the freezer is accomplished is especially referred to. It is stated that the clamps do not in any way interfere with the working of the freezer, and the tub may be allowed to remain fastened in its position after using and the freezing apparatus taken out. The clamps are light in weight, being made of malleable iron and wire tinned to prevent rusting. They are made in four sizes at present. No. 1 holds 2 and 3 quart Gem freezers; No. 2, 4 and 6 quart Gem freezers; No. 3, 8 and 10 quart Gem freezers, and No. 4, 14 quart Gem freezers. They can be retailed at 25 cents per pair and may be forwarded by mail, weighing but 7 ounces.

The Gem Freezer Clamp.

NEW ENGLAND NOTES.

Auburn, Me., parties are conferring with leading stockholders of the Biddeford Stove Foundry, of Biddeford, Me., trying to secure a removal of the company's plant to Auburn. Officers of the company say the change will probably be made. A refusal of the old Maine Central car shops at Auburn has been secured. If the business is moved the company's capital stock will be increased and facilities added for greatly increasing the product.

The Strange Twist Drill Works, of New Bedford, Mass., have been purchased by William A. Nye, of Bournedale, Mass., and the machinery and entire plant will be removed to the latter place.

Scannell & Wholey, boiler makers, Lowell, Mass., recently sent two carloads of boilers and machinery to Mexico, an agent, Mr. Navora, coming to this country to make the purchase.

The Waterbury Farrell Foundry and Machine Company, in Ansonia, Conn., have just accepted the plans for new buildings which will increase their capacity and make the concern one of the largest in that section.

The Kitson Machine Company, of Lowell, Mass., have shipped a large consignment of cotton machinery to Mexico, recently.

F. Draper & Co., East Cambridge, Mass., who for many years have been the sole manufacturers of the Draper's steel and brass oilers, have sold out their entire plant, machinery, stock and good will of the business to the H. A. Williams Mfg. Company, of Boston and Taunton.

An Alabama syndicate with $250,000 capital have been negotiating for the Mount Hope Iron Company's works at Somerset, Mass., for the manufacture of nails, plate and rolled iron.

The Bartlett manufacturing plant at Milford, N. H., is to be considerably enlarged.

Berlin, N. H., is to have a water and sewerage system at a probable expense of $100,000.

A new machine shop is soon to be erected at Winsted, Conn., by the Winsted Machine Company.

It is rumored that the lock shop property, formerly occupied by the Nashua Lock Company, of Nashua, N. H., is about to change hands, and that a foundry is to be placed therein.

The Keisel Fire Brick Company, of Rochester, N. H., have burned their second kiln of 22,000 bricks.

A new planer has been introduced into the Longley Box Mill, at Marlboro, Mass.

The Upson Nut Company, at Unionville, Conn., has recently shipped several large machines to Canada.

An English syndicate has made offers for the auger and bit factories of A. N. Wright, at Centrebrook, Conn., and Charles Griswold, of Ivoryton, Conn.

Scannell & Wholey, of Lowell, Mass., recently put in a 100 horse-power boiler for the Kitson Company, at Lowell, and shipped two boilers of 75 horse-power each to New Hampshire parties, and have in process of construction 15 uprights for a large engine builder in the same State. They are also building two yacht boilers.

A New England company offers, it is stated, to move its cotton and woolen mill to Greensboro, N. C., provided satisfactory inducements are extended. The Greensboro Land and Improvement Company is interested.

Mr. Bullard, junior member of the iron firm of Bacon & Co., of Boston, has just returned from an extended business trip through the Middle States. He considers it doubtful if values can hold much longer if business does not pick up.

The agent for the Chase Patent Elevator Company, of Fall River, Mass., has returned from an extended trip through the West. He has interested iron men in the patent and they are about to begin experiments to see if the machine will handle iron as it does coal. If the trials prove successful, the agent has been assured of heavy orders.

The firm of J. A. Hennessey & Co. points with pride to the fact that they have manufactured 13,741 rollers since January 24, 1889, and hopes to double those figures for 1890.

The plant of the Overman Wheel Works, at Chicopee, Mass., is to be doubled in capacity. A large building is to be erected on land recently purchased. It will be five stories high, excluding a large basement. The main part will be 200 x 50 feet, with two ells on each end, one 100 x 50 and the other 50 x 60 feet. The present main plant of the company is 150 x 50 feet, so that the new addition will double the capacity. The two buildings will be connected by an underground and overground passage. About 400 men are employed at present, being divided into night and day forces.

A new tack company have been formed at Pittsfield, Mass., and incorporated under the general laws of the State. Col. Walter Cutting is president and W. E. Wilcox treasurer and general manager of the concern.

It is officially stated that in May next the directors of the Northern Railroad will declare from their surplus an extra dividend of 25 per cent., amounting to $750,000. It is understood that after this extra has been paid the corporation will have a surplus of at least $500,000.

The shovel-handle factory at Dexter, Maine, is beginning to make early preparations for a brisk summer business.

G. B. Rowbotham, of Boston, has been prospecting in the South for a site for a leather belting factory, and proposes to locate at Greenville, S. C., provided the citizens furnish $25,000, half the capital stock.

A movement will soon be started to increase and improve the water-power of the stream known as the Mad River, at Winsted, Conn., on the banks of which about 25 or more factories are situated.

Self-lubricating bearings are being perfecting at present by a Gardner, Mass, machine company, and will soon be put on the market. Experiments are being made with them on cotton spindles. It is understood that a cotton manufacturer has offered a large sum for the patent, provided they worked satisfactorily on cotton spindles.

The Portland Boiler Company, of Portland, Me., are making preparations to receive a number of large machines which it has contracted for, and which will greatly facilitate the production of heavy work. New shears will be put in, having cast steel jaws, a reach of 43 inches and capable of cutting through a plate of steel 1¼ inches in thickness. The new riveting machine weighs 40 tons and has a pressing power equal to 75 tons. Its immense jaws are to be worked by hydraulic force. A new set of rolls and a capping machine will be supplied. There is to be four steel rollers, each 13 feet long.

Workmen have begun driving piles in the dock at Bath, Me., south of the Bath Iron Works, where the new building for iron working tools, necessitated by the steel shipbuilding plant, will be placed. About 100 piles will be driven. A new engine has just been put in at the brass works of Watson & Co. The increased amount of shipwork calling for more power.

The second annual opening of the carriage industry which began Tuesday last at Amesbury, Mass., promises to be more successful than last year's. Amesbury turns out from 25,000 to 30,000 carriages yearly. The first plant was established less than 50 years ago, and at present there are 40 establishments, consisting of from one to six buildings each. As nearly as can be estimated there are nearly 2000 employes engaged in the industry at this place.

The question of an emigrant landing at New York is settled, for the present, at least, by the determination of Secretary Windom to fit up the barge office immediately for that purpose. The building was expressly designed as a landing for the inspection of baggage from the foreign steamers, but can be reconstructed at a cost of about $20,000.

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CURRENT HARDWARE PRICES.

APRIL 9, 1890.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.

Domestic.....₱ doz $3.00, 33⅓%
Excelsior.....₱ doz $10.00.....50&10&2%
Washburn's Self-Locking.....20@20&10%

Ammunition,—

Caps, Percussion, ₱ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....34@35¢
E. B. Trimmed Edge, 1-10's.....46@48¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....46@47¢
Musket Waterproof, 1-10's.....50¢
G. D.....28¢
S. B. Genuine Imported.....45¢
Eley's E. B.....54¢ @ 55¢
Eley's D Waterproof, Central Fire...$1.60

Cartridges—
Rim Fire Cartridges.....50&5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting 15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Primers—
Berdan Primers, $1.00.....2%
B. L. Caps (for Sturtevant Shells) $1.00, 2%
All other Primers, $1.20.....2%

Shells—
First quality, 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
I X L, 10 and 12 guage.....40&5&2%
"Special," 16 gauge.....30&10&2&2%
"Special," 10 and 12 gauge.....40&10&2%
Fowler's Pat.....$3.25
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%

Shells Loaded—
Standard. List.....40@40&10&5%

Wads—Price per M.
U.M.C.&W. R. A.—B. E., 11 up... 68¢
U.M.C.&W. R. A.—B. E., 9&10... 82¢
U.M.C.&W. R. A.—B. E., 8..... 96¢
U.M.C.&W.R. A.—B. E., 7.....$1.10
U.M.C.&W. R. A.—P. E., 11 up.. 1.15
U.M.C.&W. R. A.—P. E., 9&10.. 1.50
U.M.C.&W. R. A.—P. E., 8..... 1.70
U.M.C.&W.R. A.—P. E., 7..... 1.80
Dis.20&2
Eley's B. E., 11 up.....$1.75
Eley's P. E., 11@20.....2.80

Anvils,—

Eagle Anvils, ₱ ℔ 10¢.....15@15&5%
Peter Wright's.....10½¢
Armitage's Mouse Hole.....9¢
Armitage's Mouse Hole, Extra.11½@11¾¢
Trenton.....9½@10¢
Wilkinson's.....9¾@10¢
J. & Riley Carr, Pat. Solid.....11@11½¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—
Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%
Star.....45&5%

Apple Parers—See Parers. Apple, &c.

Augers and Bits—

Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.
Rockford Bit Company.
70%
Cook's, Douglass Mfg. Co.....55%
Cook's, N. H. Copper Co.50&10&50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₱ set, 32½ quarters, No. 5, $5; No. 30, $3.50.20%
Lewis' Patent Single Twist.....45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60@60&5%
Snell's Jennings Pattern.....60%
Pugh's Black.....20%
Rockford, Jenning's Pattern.....60%
Car Bits.....50&10@60%
Car Bits, P. S. & W. Co.....60&10%
Snell's Car Bits.....60%
L Hommodieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....10%
Cincinnati Bell-Hangers' Bits.....30%

Bit Stock Drills—
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood..40&10%
Cincinnati, for wood.....30&5%
Cincinnati, for metal.....40&10

Expansive Bits—
Clarks' small, $18; large, $26...35@35&5%
Ives' No. 4, ₱ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—
Common.....₱ gross $2.75@3.25
Diamond.....₱ doz $1.10.....25&10%
Bee.....25@25&5%
Double Cut Shepardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co...30&10%
Double Cut, Hartwell's, ₱ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%

Hollow Augers—
Ives.....
French, Swift & Co.....
33⅓@ 33⅓&10%
Douglass'.....
Bonney's Adjustable, ₱ doz $48....40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....30@30&5%
Cincinnati Standard.....25&10%

Ship Augers and Bits—
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c—

Awls, Sewing, Common ₱ gr $1.70, 35%
Awls, Should. Peg. ₱ gr $2.45, 40@40&10%
Awls, Pat. Peg...₱ gr 63¢.... 40@40&10%
Awls, Shouldered Brad..2.70 ₱ gr.....35%
Awls, Handled Brad...$7.50 ₱ gr.....45%
Awls, Handled Scratch ₱ gr, $7.50.35&10%
Awls, Socket Scratch, ₱ doz, $1.50.25@30%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality	$8.00	$8.50
Others	7.50	8.00

Note.—Jobbers often sell at lower prices than the above.

Axle Grease—See Grease, Axle.

Axles—

No. 1, 4¼@5¢, No. 2 5½@6¼¢ } 3% cash
Nos. 7 to 14.....55&5%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
National Tubular Self-Oiling: Standard Farm (1 to 5) and Special Farm (A1 to A5):
Less than 10 sets.....33⅓&5%
Over 10 sets.....33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—

Spring Balances.....40%

No.	2000	20	30
Chatillon, ₱ doz	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Bars.

Crow—
Cast Steel.....₱ ℔ 4¼¢
Iron, Steel Points.....₱ ℔ 3¾¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82...50&10@ 50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%

Beaters, Egg, &c—

Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....25%
Dover.....₱ doz $1.50
National, ₱ doz $4.50.....35&5%
Family (T. & S. Mfg. Co.), ₱ gro $17.00@ $18.00
Duplex (Standard Co.).....₱ doz $1.25
Rival (Standard Co.).....₱ doz $1.00
Duplex Extra Heavy (Standard Co.)..... ₱ doz $3.50
Triumph (T. & S. Mfg. Co.), ₱ gro $10.50 @$11.50
Advance, No. 1.....₱ gro $10.50
Advance, No. 2.....₱ gro $10.00
Bryant's.....₱ gro $14.00
Ayres' Spiral.....₱ gro $5.00
Double (H. & R. Mfg. Co).....₱ gro $16.20
Easy (H. & R. Mfg. Co.).....₱ gro $14.00
Triple (H. & R. Mfg. Co.).....₱ gro $16.20
Spiral (H. & R. Mfg. Co.).....₱ gro $4.50
Faine, Diehl & Co.'s.....₱ gro $24.00

Bells—

Cow—
Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Dodge, Genuine Kentucky....70@70&10%
Texas Star.....50&10@50&10&5%
Call.....40@40&5%
Farm Bells.....₱ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Door—
Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's..... 10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Pull, Western.....25&10%

Electric,
Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%

Hand—
Light Brass.....70&10 @ 75%
Extra Heavy.....60&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe (Cone's Patent).....25&10@35%

Bellows—

Blacksmiths'.....60@60&5%
Molders'.....40@40&10%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70&10%
Standard.....70&70&5%
Extra.....60&5@60&10%
N. Y. B. & P. Co., Carbon.....60&10&5%
N. Y. B. & P. Co., Diamond.....50&10%

Bench Stops—See Stops, Bench.

Benders, Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Ordinary Tackle, list May 20, 1889.... 50@50&10%
Cleveland Block Co., Mal. Iron.....50%
Moore's Novelty, Mal. Iron.....50%

Bolts—

Carriage, Machine, &c.—
Com. list June 10, '84.....70&12½&2%
Genuine Eagle, list Oct., '84...75&10@80%
Phila. pattern, list Oct. 7, '84..80@80&10%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....75&10
Bolt Ends, list Jan. 1, 1890.....75&10

Door and Shutter—
Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list).....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..60&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list...55&10%
Wr't Sunk Flush, Stanley's list...50&10%
Wr't B.K.Flush, Com'n " ...55&10%

Stove and Plow—
Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%

Tire—
Common, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83.....65%
Keystone, Philadel., list Oct. '84...80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '85.....65%
R.B.&W., Philadel., list Oct. 16, '84....80%

Borers, Tap.

Common and Rind.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10&30%
Clark's.....33⅓@35%

Borax.....₱ ℔ 9½@10½¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.

Per ℔.....2¾¢

Braces,—

Amidon's
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
P. S. & W. Co., Peck's Patent.....60%
Barber's,
Nos. 10 to 16..... 50%
Nos. 30 to 33..... 50%
Nos. 40 to 63..... 50&10%
Barker's,
Nos. 8, 10 and 12.....75&10@80%
Plated, Nos. 8, 10 and 12....65&10@70%
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10&50%
Spofford's.....50&5@50&10%

Brackets—

Shelf plain, Sargent's list, 55&10@55& 10&10%
Shelf, fancy, Sargent's list, 60&10@60 &10&10%
Reading, plain.....50&10@60&10&5%
Reading, Rosette.....60&10@60&10&10%

Bright Wire Goods—See Wire.

Broilers—

Henis' Self-Basting. } Inch..... 9 10 9x11
Per doz...$4.50 5. 6.50

Buckets, Well.

Galvanized—
Hill's.....₱ doz, 12 qt, $4.25; 14 qt, $5.25
Iron Clad.....₱ doz, 14 qt, $4.25@$4.50
Whiting's Flat Iron Band.....$4.25@4.50
Whiting's Wired Top..₱ doz $4.00@4.25

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers, Butchers'.

Butts—

Brass—
Wrought Brass.....75@75&10%
Cast Brass, Tiebout's'.....50%
Cast Brass, Corbin's, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—
Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.
Loose Joint, Japanned.
Loose Joint, Jap. with Acorns..
Parliament Butts.
Mayer's Hinges.
Loose Pin, Acorns.
Loose Pin, Acorns, Japanned.
Loose Pin, Acorns, Japanned, Plated Tips.
.70&5@ 70&10%

Wrought Steel—
Fast Joint, Narrow.
Fast Joint, Lt. Narrow.
Fast Joint, Broad.
Loose Joint, Broad.
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.
Inside Blind, Light.
Loose Pin.
.70&5@ 70&10%
Bronzed Wrought Butts.....50%

Calipers—See Compasses.

Calks, Toe—

Gautier.....₱ ℔ 5½@6¢
Dewicks (Burke).....₱ ℔ 5½@6¢

Can Openers—See Openers, Can.

Cards—

Horse & Curry.....10&10@10&10&10%
Cotton.....10@10&10%
Wool.....10@10&10%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sweepers Carpet.

Cartridges—See Ammunition.

Casters—

Bed..... } Brass....55@55&10%
Plate..... } Others...60@60&10%
Shallow Socket....
Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10@40%
Yale, Gem.....60@60&5%
Martin's Patent (Phœnix).....45&10@50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

Cattle Leaders—See Leaders, Cattle.

Chain—

Trace, 6¼-10-2, exact, ₱ pair, $1.03.....50&10@50&10&5%
Trace, 6¼-10-3, exact, ₱ pair 92¢.....50&10@50&10&5%
Trace, 7-10-2, exact, ₱ pair $1.11.....50&10@50&10&5%
NOTE.—Traces, "Regular" sizes, 3¢ net ₱ pair less than exact.
Log, Fifth, Stretcher, and other fancy Chains, List Nov. 1, 1884 50&10@50&10&5%

American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$8.00	5.70	4.80	4.20	3.90	3.75	3.65	3.55

Less than cask lots, add 1¼@1½¢ ₱ ℔.
German Coil, list of June 20, 1887 50&10&5@60%
German Halter Chain, list of June 20, 1887.....50&10&5@60%
Covert Halter.....60&2%
Covert Traces.....35@2%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₱ ℔ 5½@6¢
Jack Chain, Iron.....75&5@75&10%
Jack Chain, Brass.....70&10@75%

Chalk—

White.....₱ gr 50¢
Red.....₱ gr 70¢
Blue.....₱ gr 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—

Socket Framing and Firmer.
P. S. & W.
New Haven.
Witherby.
Mitx.
Ohio Tool Co.
.75 @ 75&10
Douglass.....75@75&5%
Buck Bros.....30%
Merrill.....60@10@60&10&5%
L. & I. J. White.....30@30&5%

Tanged and Miscellaneous.
Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to $
Buck Bros.....30%
Cold Chisels, ₱ ℔.....16@10%

Chucks—

Beach Pat.....each, $8.00.....20%
Morse's Adjustable,each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Balz Pat.....25%
Skinner's Pat. Drill Chucks.....30%
Skinner's Independent Lathe Chucks.40%
Skinner's Pat. Comb. Chuck.....40%
Union Mfg. Co.,
Victor.....$8.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Clamps—

R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....20&10%
Stearn's Adjustable Cabinet and Corner.....20&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....15%

Cleavers.

Butchers'.
Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lobolf & Co.....40@40&5%

Clips—

Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips.....66⅔&5&70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₱ ℔, 5½¢
Steel Felloe Clips.....₱ ℔, 6¢
Baker Axle Clips.....25¢

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.

Hardware list.....50&2%

Coffee Mills—See Mills, Coffee.

Collars, Dog, &c.

Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list..40%

Combs, Curry.

Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....20%
Perfect.....50%

Compasses, Dividers, &c.—

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
Call's Pat. Inside.....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers 25&10&10%
Lock Calipers and Dividers.....25&10%
Combination Dividers.....25&10%

Coopers' Tools—See Tools, Coopers'.

Cord, Sash—

Common.....₱ ℔ 10@11¢
Patent, good quality.....₱ ℔ 13@13½¢
White Cotton Braided, fair...₱ ℔ 28@29¢
Common Russia Sash.....₱ ℔ 13½¢
Patent " " .....₱ ℔ 15¢
Cable Laid Italian Sash.....₱ ℔ 22@23¢
Indian Cable Laid " .....₱ ℔ 13¢
Silver Lake—
A Quality, White, 50¢.....10&10&5%
A Quality, Drab, 55¢.....10&10&5%
B Quality, White, 50¢.....28@.40%
B Quality, Drab, 55¢.....31@33%
C Quality, White (only).....28½@28¢
Sylvan Spring, Extra Braided, White, 34¢
Sylvan Spring, Extra Braided, Drab..30¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Samson—
Braided, White Cotton, 50¢...30@30&5%
Braided, Drab Cotton, 55¢...30@30&5%
Braided, Italian Hemp, 55¢...30@30&5%
Braided, Linen, 80¢.....30@30&5%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₱ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—

Grain.....50&5&2@50&10&2%

Crayons.

White Crayons, ₱ gr, 12@12½¢.....10%
D. M. Stewart Mfg. Co., Metal Workers, ₱ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₱ gr, $2.50.....25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain.

Cutters—

Meat.
Dixon's ₱ doz.....40&5%
Nos.....1 2 3 4
$14.00 $17.00 $19.00 $30.00
Woodruff's ₱ doz.....40&5%
Nos.....100 150
$15.00 $18.00
Hales Pattern ₱ doz.....70@70&5%
Nos.....11 12 13
$27.00 $33.00 $45.00
American.....30%
Nos.....1 2 3 4 B 5
Each.....$5 $7 $10 $25 $50 $60
Enterprise.....30%
Nos.....10 12 22 32 42
Each.....$3 $2.50 $4 $6 $15
Pennsylvania.....40&10%
Nos.....1 2 3 00
₱ doz....$24.00 $28.00 $36.00 $28.00
Miles' Challenge ₱ doz.....45@45&10%
Nos.....1 2 3
$22.00 $30.00 $40.00
Home No. 1.....₱ doz, $26.00, 55&10%
Draw Cut, each:
Nos...5 2 6 8
$50 $75 $80 $225 .....20@25%
Beef Shavers (Enterprise).....20&10@30%
Little Giant.....50%
Chadborn's Smoked Beef Cutter, ₱ doz $60.00

Tobacco.
Champion.....20&10@30%
Wood Bottom.....₱ doz $5.00@$5.25
All Iron.....₱ doz $4.25
Nashua Lock Co.'s..₱ doz, $18.00 50@55%
Wilson's.....55%
Sargents's.....₱ doz, $24, 55&10%
Acme.....₱ doz $20.00, 40%

Washer.
Smith's Pat.....₱ doz $12.00, 20&10&10%
Johnson's.....₱ doz $11.00, 33⅓%
Penny's, ₱ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₱ doz $16.00, 60&10%
Bouney's.....30&10%
Cincinnati.....25&10%

Cutlery—

Beaver Falls & Booth's.....33⅓%
Wostenholme.....$7.75 to $

Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c —

Samson Post Hole Digger, ₱ doz $36.00, 25&10%
Fletcher Post Hole Augers, ₱ doz $36, 20%
Eureka Diggers.....₱ doz $16.00@17.00
Leed's.....₱ doz $8.00@9.00
Vaughan's Post Hole Auger, ₱ doz $13.00@14.00
Kohler's Little Giant.....₱ doz. $18.00
Kohler's Hercules.....₱ doz. 15.00
Kohler' New Champion.....₱ doz. $9.00
Schniedler.....₱ doz. $18.00
Ryan's Post Hole Diggers..₱ doz $24.00
Cronk's Post Bars, ₱ doz $90.00, 50@5&50&10%
Gibbs Post Hole Digger, ₱ doz $30.00, 50¢
Imperial, ₱ doz $15.....45%

Dividers—

See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.

Money, ₱ doz.....$18&$20

Drawing Knives — See Knives, Drawing.

Drills and Drill Stocks—

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action...25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85

Twist Drills—
Morse.....50&10&5%
Standard.....50&1 &5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans-See Pans, Dripping.

Drivers, Screw.

Douglas Mfg. Co.....20@10&10%
Disston's.....4&10%
Disston's Pat. Excelsior.....45&10%
Buck Bros.....30%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60.....66⅔&10&10%
P. S. & W.....70 %
Knapp & Cowles No.1.....60&20&70%
No. 1 Extra.....60@60&10
Nos. 00 & 4.....50&5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25& .0%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₱ doz $6.00,25&10%
Syracuse Screw-Driver Bits...30&30&5%
Screw-Driver Bits .....₱ doz. 50&75¢
Screw-Driver Bits, Parr's.....₱ gro $6.25
Fray's Hol. Hdle. Sets. No. 3. $14.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....20&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits .... %

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery. — No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F. FF.
Kegs, ₱ ℔	4½¢	5 ¢	2½¢
½ kegs, ₱ ℔	4¾¢	5¼¢	2¾¢
¼ kegs, ₱ ℔	5 ¢	5½¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6¼¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.

Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Fasteners, Blind—

Mackrell's, ₱ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₱ gr..60&10%
Van Sand's Old Pat., $15.00 ₱ gr..55&10%
Washburn's Old Pattern, ₱ gr.....$9.00
Merriman's.....new list
Austin & Eddy No. 2008 ₱ gr.....$9.00
Security Gravity, ₱ gr.....$9.00

Faucets.—

Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@ 60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₱ doz $50.00.....20&10%
Lane's, ₱ doz $36.00.....25&10%
Victor, ₱ doz $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—

Derby and Cincinnati.....50&5%
Brewster.....55&5%

Files—

Domestic—
Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
Other makers, best brands.....60&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Nicholson's Horse Rasps....60&10@60& 10&5%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%

Imported—
Moss & Gamble....List, April 1, 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

Fixtures.

Grindstone—
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors — See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—

Hay, Manure, &c., Asso List.....70%
Hay, Manure, &c., Phila. List. 60@60&5%
Plated, see Spoons.

Frames—

Saw—
White Vermont.....₱ gro $9.00@10.00
Red, Polished and Varnished.....₱ doz $1.50, 25%

Screen, Window and Door—
Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons...33⅓@ 33⅓&10%
Stearns' Frames and Corners..25@25&10%

Freezers, Ice Cream—

Buffalo Champion.....65&65&5%
Shepard's Lightning.....65@65&5%
White Mountain.....50&20&5%
New Arctic.....50&40&5%
American.....60%
Gem.....65%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60
Peerless and Giant.....60&10
Zero and Pet.....65&10
Boss.....65&10&10
Keystone, P. D. & Co., each, $1.50.....25%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Fuse— ₱ 1000 ft
Common Hemp Fuse, for dry ground..$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr. 4.85
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gates, Molasses—

Stebbin's Pattern.....75@75&10%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....20%
Lincoln's Pattern.....70@70&10%
Weed's.....20&10%
Boss, ₱ doz:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....50@50&5%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....

Gimlets—

Nail and Spike.....50&10&5%
" Eureka " Gimlets.....40&10%
" Diamond " Gimlets.....₱ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
" Bee," ₱ gr $12.....25@25&5%

Glue—

Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Le Page & Co.'s Improved Process 25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.

Fraser's.....Keg ₱ ℔ 4¢, Pail ₱ ℔ 5¢
Fraser's, in boxes.....₱ gr $9.50
Dixon's Everlasting, in bxs...₱ doz 1 ℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting....10-℔ pails, ea. 35¢
Lower grades, special brands, ₱ gr $5.50@$7.00

Grindstones—

Small, at factory.....₱ ton $7.50@9.00

Grindstone Fixtures—See Fixtures, Grindstone.

Hack Saws—See Saws.

Hafts, Awl.

Sewing, Brass Fer. ₱ gr, $3.50.....45&10%
Pat. Sewing, Short. $1.00 ₱ doz.....40&10%
Pat. Sewing, Long.....₱ doz $1.20
Pat. Peg, Plain Top..₱ gr $10.00...45&10%
Pat. Peg, Leather Top. ₱ gr $12.00.45&10%

Halters.

Covert's, Rope, ½-in. Jute.....50&2%
Covert's, Rope, ½-in. Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse and Cattle Ties, 60&10&2%

Hammers—

Handled Hammers—
Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.... } List Jan. 15, '87
Humason & Beckley... } 50@50&10%
Atha Tool Co.....
Fayette R. Plumb.....50@50&10%
C. Hammond & Son..List, Oct., 1889, 50@50&10%
Hartford Hammer Co.....50@50&10%
Verree.....5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%

Heavy Hammers and Sledges—
3 ℔ and under.....₱ ℔ 40¢
3 to 5 ℔.....₱ ℔ 36¢ } 70@70&10%
Over 5 ℔.....₱ ℔ 30¢
Wilkinson's Smiths.....10½¢@11¢₱ ℔

Handcuffs and Leg Irons—See Police Goods,

Handles—

Cross-Cut Saw Handles—
Atkins' No. 1 Loop, ₱ pair, 28¢; No. 3 18¢; No. 6, 16¢; No. 2 and No. 4 Reversible, 18¢.
Boynton's Loop Saw Handles, 50¢....60%
Champion.....15

Iron, Wrought or Cast—
Door or Thumb.

Nos.....	0	1	2	3	4
Per doz....	$0.90	1.00	1.18	1.35	1.50

60&10&10%

Roggin's Latches.....₱ doz 30¢@35¢
Bronze Iron Drop Latches..₱ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88 ..... net
Barn Door, ₱ doz $1.40.....10&10%
Chest and Lifting.....70%

Wood—

Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₱ gr $2.00
Hickory Firmer Chisel, ass'd. ₱ gr 4.50
Hickory Firmer Chisel, large. ₱ gr 5.00
Apple Firmer Chisel, ass'd....₱ gr 5.00
Apple Firmer Chisel, large...₱ gr 6.00
Socket Firmer Chisel, ass'd...₱ gr 3.00
Socket Framing Chisel, ass'd. ₱ gr 5.00
J. S. Smith & Co.'s Pat File.....50
File, assorted..... ₱ gr 7 75 } 40@ dis 40%
Auger, assorted.....₱ gr 5.00 } 40&10-
Auger, large.....₱ gr 7.00 }
Pat. Auger, Ives'.....30&10-
Pat. Auger, Douglass.....₱ set $1.20
Pat. Auger, Swan's.....₱ set $1.0
Hoe, Rake, Shovel, &c. .....50&10 %

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track.....65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....60%
Climax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Beed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling's Imp'ved (Anti-Friction).65&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's.....50&10@60%
The Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₱ doz pr. 4 in, $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₱ ft. 10¢.....50 &15@60%
Carrier Steel Anti-Friction.....50@50&5%
Architect, ₱ set $6.00.....20%
Eclipse.....20&10%
Felix, ₱ set $4.50.....20%
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20@20&10%
Stearns' Anti-Friction.....20@20&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₱ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel 40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star.....40&10@40&10&5%
May.....50&5@50&10%
Barry, $6.00.....40&10%

Harness Snaps—See Snaps.

Hatchets—

List Jan. 1, 1886.
Isaiah Blood.....35@40%
Hunt's Shingling, Lath and Claw..40&5%
Hunt's Broad.....40%
Buffalo Hammer Co.....40&10@50%
Hurd's.....40&10@50%
Fayette R. Plumb.....40&10@50%
Wm. Mann, Jr., & Co.....50@50&5%
Underhill Edge Tool Co.....40@50@40&10%
Underhill's, Haines and Bright.....33⅓%
C. Hammond & Son.....50@50&10%
Simmons'.....40&10@50%
Peck's.....40&10@40&10&5%
Kelly's.....50@50&5%
Sargent & Co.....50%
P., S. & W. Co.....50%
Ten Eyck Edge Tool Co.40&10@40&10&5%
Collins.....10%
Schulte, Lohoff & Co.....50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Palmer.....50&5&10%
Seymour.....70&2%
Nicholson.....45&10%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's, Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible....70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $10.50; No. 3, for Brick, $13.50. .....25&2%

Gate Hinges—

Western.....₱ doz $4.40, 60%
N. E.....₱ doz $7.00, 55%
N. E. Reversible.....₱ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₱ doz $5.00, 55&10%
Automatic.....₱ doz $12.50, 50%
Common Sense.....₱ doz pair $4.50, 50%
Seymour's.....45&10%
Shepard's.....60&10&5%
Reed's Latch and Hinges. ₱ doz $12.00, 50%

Spring Hinges—

Geer's Spring and Blank Butts.....40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Acme.....30%
J. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem, and Star..20%
Oxford.....20%
Barker's Double Acting.....20&10%
Union Mfg. Co.....25%
Dommer's.....30%
Huckman's.....15@20%
Chicago.....30%
Wiles'.....10%
Devore's.....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Bardsley's Patent.....40%

Wrought Iron Hinges

Strap and T.....70&10%
Screw Hook and Strap.....{ 6 to 12 in., ₱ ℔ .4 2-10¢ / 14 to 20 in., ₱ ℔ .3 7-10¢ / 22 to 36 in., ₱ ℔ .3 2-10¢
Heavy Welded Hook.....{ 6 to 12 in., ₱ ℔ .4 2-10¢ / 14 to 20 in., ₱ ℔ .3 7-10¢ / 22 to 36 in., ₱ ℔ .3 2-10¢
Screw Hook and Eye.....{ ⅛ in., ₱ doz $1.50 / ¼ in., ₱ doz $2.45 / ⅜ in., ₱ doz $3.80 } 10%
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges "Providence".....{ 8, 10 & 12 in., ₱ ℔.....5¢ / over 12 in., ₱ ℔....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. 60&5@60&10%
Hubbard & Co., S. & O. Pat.60&5@60&10%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60@60&10%

Handled—

Garden, Mortar, &c.....70%
Planter's, Cotton, &c.....70%
Warren Hoe.....60%
Magic.....₱ doz $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₱ doz $18.....60%

Bit.

Extension, Barber's. ₱ doz $15.00.....40@40&10%
Ives, ₱ doz $20.00.....60&5@60&10%
Diagonal.....₱ doz $24.00, 40%
Angular.....₱ doz $24.00, 40&5%

File and Tool—

Balz Pat.....₱ doz $4.00; 25%
Nicholson File Holders.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list.....} 60&10&10%
Bird Cage, Reading.....}
Clothes Line, Sargent's list..}
Clothes Line, Reading list. 60&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading .50&10@50&10&10%

Wrought Iron—

Cotton.....₱ doz $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)..50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....50%
Wire Coat and Hat, Miles', list April, 1886.....50%
Indestructible Coat and Hat.....45%
Wire Coat and Hat, Standard.....45%
Handy Hat and Coat.....50&10%
Steady Ceiling Hooks.....50&10%
Belt.....80@80&10%

Miscellaneous.

Grass. No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₱ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks .....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75&10@75&10&5%
Standard.....70@70&10%
Extra.....60@60&10%
N. Y. B. & P. Co., Para.....30&10%
N. Y. B. & P. Co., Extra.....50%
N. Y. B. & P. Co., Dundee.....60&10&5%

Huskers—

Blair's Adjustable.....₱ gr $8.00
Blair's Adjustable Clipper...₱ gr 7.00
Hubbard's Solid Steel.....₱ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory ...₱ 100 ℔, $2.60@$2.75
Self-Heating.....₱ doz $9.00 net
Self-Heating, Tailors'....₱ doz $18.00 net
Gleason's Shield and Toilet..25%
Mrs. Pott's Irons.....40@40&10%
Enterprise Star Irons..40@40&10%
Cold Handle Sad Irons ....40&10@50%
Combined Fluter and Sad Iron, ₱ doz, $15.00.....15%
Fox Reversible, Self-Fluter ₱ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England.....6¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible.....20@20&5%
National Self-Heating.....30 %

Soldering—

Soldering Coppers.....₱ ℔ 22 @ 23¢
Covert's Adjustable, list Jan. 1, 1886. 35&2%

Irons, Pinking, per doz., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy.....25%

Kettles—

	Spun.	Stamped.
Brass, 7 to 17 in., ₱ ℔....	24¢	21 ¢
Brass larger than 17 in., ₱ ℔	26¢	23½¢

Enameled and Tea—See Hollow-Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₱ doz $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives.....25@30%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Nichols' Butcher Knives.....40&10%
Ames' Shoe Knives.....20@25%
Ames' Bread Knives. ₱ doz $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn, Auburn Mfg. Co. Crescent.....$3.50

Corn—

Bradley's.....10%
Wadsworth's.....25%

Drawing—

Witherby, P. S. & W, Mix, New Haven.....} ..75 @ 75&10 %
Merrill.....60&10@60&10&5%
Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning. Mfrs'. price ₱ doz $18.00, 25% But jobbers cut this price freely, often selling at $8 @ $8.50.
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₱ doz $11.00@$11.50
Heath's.....₱ doz $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay.....₱ doz.$8.00 @ $9.00

Mincing.

Am. (2d quality), ₱ gr., 1 blade blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ₱ doz, Single, $2.00; Double, $3 40@45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₱ doz $3.00 .25%
Buffalo Double Adj'table. ₱ doz $3.00 25%

Knobs—

Door Mineral.....60@65%
Door Por. Jap'd.....70@75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60@60@60&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₱ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladles.—

Melting, Sargent's	55&10%
Melting, Reading	35&10%
Melting, Monroe's Pat...₱ doz $4.00,	40%
Melting, P. S. & W.	35&10@40%
Melting, Warner's	30%

Lanterns—

Tubular—

Plain with Guards, ₱ doz.....$4.00@4.25
Lift Wire, with Guards.....$4.50@4.75
Square Plain, with Guards....$4.00@4.25
Sq. Lift Wire, with Guards....$4.25@4.50
Without Guards, 25¢ ₱ doz less.

Miscellaneous.

Police, Small, $6.00; Medium, $7.25; Large, $9.75.....20&25%

Lawn Mowers—See Mowers, Lawn.

Leaders. Cattle.

Humason. Beckley & Co.'s.....70%
Sargent's.....60%&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters. Transom.

Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Reiher's, list Aug. 1, 1889-
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's Universal.....40@40&10%

Lines—

Cotton and Linen Fish, Draper's 50%
Draper's Chalk.....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson, Cotton, No. 4, $2; No. 4½, $2.25; No. 5, $2.50.....10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes.. Nos. 1 10 20
100 ft. $4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₱ doz $7.50, 20%

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin...} List March, '84, rev Jan.1,'85..33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 86 to 96.....30%
Stoddard Lock Co.....30@33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&2%
"Champion" Cab. and Combin...33⅓%
Yale.....net prices
Romer's.....25%

Door Locks, Latches, &c.

R. & E. Mfg. Co. ,list Mar.20, 1889.....} 60&10@60 &10&10
Mallory, Wheeler & Co., list July, '88.....} Much
Sargent & Co.,list Aug.1, '88 } lower net
Reading Hardware Co., list Feb. 2, '88.....} prices often made.
Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&25%
Plate.....33⅓&2%
F. Many's "Extension Cylinder" $10.50 ₱ doz.
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deitz Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Shepardson or U. S.....35%
Feiter or American.....40&10%
Seed's N. Y. Hasp Lock.....25%

Padlocks—

List Dec. 23, '84.....75@75&10%
Brittan, Graham & Mathes.....75&10%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....25&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Deitz.....40%
Champon Padlocks.....40%
Hotchkiss.....30%
Star.....45%
Horseshoe.....₱ doz, $9.40@40&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Pat.....25%
Scandinavian.....90@90&10%
E. T. Fraim's Keystone Scandavian: Nos. 119, 120, 130 and 140.....90&10% Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₱ gr..33⅓%
Ferguson's.....33⅓%
Morris and Triumph, list Aug. 16, 1886, 60&2%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₱ gr $4.00
Common Sense, Nickel Plated ₱ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60@60&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60@60&10%
Liesche's, Nos. 100 and 110, ₱ gr $8; 105, $10.00.....20&10%
Davis, Bronze, Barnes Mfg. Co.....50%
Champion Safety, list March 1, 1888 55@55&5%
Security.....70%
Buckeye.....₱ gro $4.80

Lumber Tools—See Tools, Lumber.

Lustro—

Four-ounce Bottles....₱ doz, $1.75; ₱ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas	$5.50	$6.75		50%
Snell's, Nice's Pat.	5.50	6.75	...40	&10&10
Jennings	5.50	6.75	...45	@45&10
Other Machines...	2.35	2.75		net

Phillips' Patent with Augers ... 7.00 ".50 ..

Fluting.

Knox, 4¼-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3¼-inch Roll, $2.15.....35%
Eagle, 5¼-inch Roll, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel, 6 in .....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00.....30%
Shepard Hand Fluter, No. 85 ₱ doz. $15.30.....40%

Shepard Hand Fluter, No. 110 ₱ doz $11.00.....40%
Shepard Hand Fluter, No. 95 ₱ doz $8.00.....40%
Clark's Hand Fluter. ₱ doz $15.00.....35%
Combined Fluter and Sad Iron, ₱ doz $15.00.....30%
Buffalo ..... ₱ doz $10.00.....10%

Hoisting—
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Differential Pulley Block....40%
Energy Mfg. Co's.....25%

Mallets.

Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks. Regular list..... .....60&5%

Measures—

Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Mills.

Coffee—
Box and Side, List Jan. 1, 1888.....60&2%
American, Enterprise Mfg Co.20&10@30%
The Swift, Lane Bros.....20&10%

Mincing Knives — See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers — See Drawers, Money.

Mowers, Lawn.

Leading makers.....60@60&10&5%
Other makers.....60&10&5@60&10&10%
Pennsylvania.....60%
Continental.....60%
New Model.....60&10&5
New Quaker City.....60&10&5%
Great American.....60&10&5%

Muzzles—

Safety.....₱ doz. $3.00, 25 %

Nails.

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15, 1889...70&10%
Tack Mfrs.' list.....60&10&10%
Wire Nails, Standard Penny.
Card June 1, '89, base.....$2.80 @ $2.90

Horse—

Nos.	6	7	8	9	10
Ausable.....	28¢	26¢	25¢	24¢	23¢.

25&10@25&10&10%

Clinton, Fin.....10½ @ 11¢, net
Essex .....28¢ 26¢ 25¢ 24¢ 23¢.
25&10@25&10&10%
Lyra .....25¢ 23¢ 22¢ 21¢ 20¢.
40&10&5@50%
Snowden 25¢ 23¢ 22¢ 21¢ 20¢.
40&10&5@50%
Putnam.....23¢21¢ 20¢ 19¢ 18¢.
1000 ℔ in year 15%
Vulcan.....23¢ 21¢ 20¢ 19¢ 18¢..12½@5%
Northwest'n.25¢ 23¢ 22¢ 21¢ 20¢.
25@25&5%
Globe .....23¢ 21¢ 20¢ 19¢ 18¢..20&2½%
Boston.....23¢ 21¢ 20¢ 19¢ 18¢..20&2½%
A. C.....25¢ 23¢ 22¢ 21¢ 20¢.
25&10@33⅓&5%
C. B.-K.....25¢ 23¢ 22¢ 21¢ 20¢.
25&10@33⅓&5%
Champlain 28¢ 26¢ 25¢ 24¢ 23¢.
25&10&10%
New Haven..28 26¢ 25¢ 24¢ 23¢.
25&10@25&10&10%
Saranac.....23¢ 21¢ 20¢ 19¢ 18¢..30&10%
Champion ...26¢ 23¢ 22¢ 21¢ 20¢.
10&10&10%
Capewell.....28¢ 26¢ 5¢ 24¢ 23¢.
35&5@35&10%
Star.....23¢ 21¢ 0¢ 19¢ 18¢.
10&10@10&12½%
Anchor.....23¢ 21¢ 20¢ 19¢ 18¢.....35%
Western.....23¢ 21¢ 20¢ 19¢ 18¢..40&10%
Empire Bronzed.....14 ₱ ℔.

Picture—
Brass Head, Sargent's list.....50&10&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list..50&10&10%
Porcelain Head, Combination list..40&10%
Niles' Patent.....40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—

Nuts, off list Dec. 18,1889: Square. Hex.
Hot Pressed..... 4¾¢ 5¼¢
Cold Punched..... 5 ¢ 5½¢
In lots less than 100 ℔, ₱ ℔, add ¼¢; 1-B boxes, add 1¢ to list.

Oakum—

Government.....₱ ℔ 7¼@7¾¢
U. S. Navy.....₱ ℔ 6¼@6¾¢
Navy.....₱ ℔ 5¼¢@5¾¢

Oilers—

Zinc and Tin .....65@65&10%
Brass and Copper .....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10&10&5%
Malleable, Hammers, Old Pattern, same list 40%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper 50%
Broughton's Zinc.....60%
Broughton's Brass 50%
Gem P. D. & Co. .....₱ gro. $2
Steel, Draper and Williams.....50%

Openers, Can.

Messenger's Comet.....₱ doz $3.00, 25%
American.....₱ gross $3.00
Duplex.....doz 25¢, 15@20%
Lyman's.....₱ doz $3.75, 20%
No. 4 French.....₱ doz $2.25, 55@60%
No. 5, Iron Handle.....₱ gr $6.00, 45&50%
Eureka.....₱ doz $2.50, 10%
Sardine Scissors.....₱ doz $2.75@3.00
Star.....₱ doz $2.75
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50 50&10&10%
World's Best, ₱ gross, No. 1, $12.00 No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₱ doz $3.00..... .....35@5%
Domestic, ₱ doz $2.50.....15%
Champion ₱ doz $2.00 .....

Packing, Steam—

Rubber—

Standard .....60&10@60&10&10%
Extra .....50&10@60%
N. Y. B. & P. Co., Standard ...50&10&5%
N. Y. B. & P. Co., Empire 70%
N. Y. B. & P. Co., Salamander. ₱ ℔ 65¢, 30%
Jenkins' Standard.....₱ ℔ 80¢, 35%

Miscellaneous—
American Packing.....10¢@11¢ ₱ ℔
Russia Packing .....14¢ ₱ ℔
Italian Packing .....13¢@14¢ ₱ ℔
Cotton Packing .....15¢@17¢ ₱ ℔
Jute.....7¢@8¢ ₱ ℔

Padlocks— See Locks.

Parers.

Apple.
Advance.....₱ doz $4.75
Antrim Combination.....₱ doz 5.50
Baldwin.....₱ doz 5.25
Champion.....₱ doz 7.25
Daisy.....₱ doz 4.00
Eureka, 1888.....each 17.00
Family Bay State.....₱ doz 12.00
Favorite.....₱ doz 5.00
Gem.....₱ doz 5.25
Gold Medal.....₱ doz 4.00
Ideal.....₱ doz 4.00
Improved Bay State.....₱ doz 30.00
Little Star.....₱ doz 4.50
Monarch.....₱ doz 13.50
New Lightning.....₱ doz 5.50
Oriole.....₱ doz 4.00
Penn.....₱ doz 4.00
Perfection.....₱ doz 4.00
Pomona.....₱ doz 4.00
Rocking Table.....₱ doz 6 00
Turntable.....₱ doz 4.50
Victor.....₱doz 13.50
Waverly.....₱ doz 4.00
White Mountain.....₱ doz 4.50
72.....₱ doz 4.25
76.....₱ doz 5.75
78.....₱ doz. 6.50

Potato—
White Mountain .....₱ doz $5.00@5.50
Antrim Combination.....₱ doz $8.00
Hoosier.....₱ doz $13.50

Pails.

Galvanized Iron—

Quarts	10	12	14
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25
Hill's Heavy Weight, ₱ dz.	3.00	3.25	3.75
Whiting's	2.75	3.00	3.25
Sidney Shephard & Co....	2.94	3.15	3.57
Iron Clad	2.50	2.75	3.00
Fire Buckets.....	2.75	3.25	3.50

Buckets, see Well Buckets.

Indurated Fibre Ware—25%
Star Pails, 12 qt .....₱ doz $6.00
Fire, Stable and Milk, 14 qt ..₱ doz $7.80

Standard Fibre Ware—

	Plain.	Decr'd
Water Pails, 12 qt., per doz..$4.00		$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No.1, 12 qt. per doz	4.50	
Fire Pails, No.2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.50	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt	6.50	7.50

Pans.

Dripping.
Small sizes.....₱ ℔ 6½¢
Large sizes.....₱ ℔ 5½¢

Fry—
Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....70&10%
Acme Fry Pans .....60&10%

Paper and Cloth—

Sand and Emery—
List April 19, 1886.....50@50&10%
Sibley's Emery and Crocus Cloth.....30%

Pencils—

Faber's Carpenters'..... ..high list 50%
Faber's Round Gilt.....₱ gro $5.25
Dixon's Lead..... .....₱ gro $4.50
Dixon's Lumber.....₱ gro $6.75
Dixon's Carpenters' ....40&10%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60@60&5%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.

Bow—
Humason, Beckley & Co.'s... ....60&10%
Sargent & Co's....$17 and $18.....60&10%
Peck, Stow & W. Co... 50&10@50&10&5%

Curtain—
Silvered Glass.....net
White Enamel.....net

Escutcheon,
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—

List September 18, 1889.
1¼ and under, Plain 47½%
1¼ and under, Galvanized 40%
1¼ and over, Plain.....60%
1¼ and over, Galvanized 47½%
Boiler Tubes, Iron.
1¼ and under.....45%
2 to 4 inch.....50%
4-inch and larger.....52½%

Planes and Plane Irons—

Wood Planes—
Molding.....45&2%
Bench, First Quality.....55&2%
Bench, Second Quality.....60&2%
Bailey's (Stanley R. & L. Co.).....40&10%

Iron Planes—
Bailey's (Stanley R. & L. Co.)..... 40&10@40&10&10%
Miscellaneous Planes (Stanley R. & L. Co.) .....20&10@20&10&10%
Victor Planes (Stanley R. & L. Co.). ..... 20&10@20&10&10%
Steer's Iron Planes..... .....35@35&10%
Merrien Mal. Iron Co.'s.....40@40&10%
Davis's Iron Planes .....40@40&10%
Birmingham Plane Co.....50@50&10%
Gage Tool Co.'s Self-Setting.....20&10%
Chaplin's Iron Planes .....40@40&10%
Sargent's ..... 30&10@30&10&10%
Standard Tool Co..... .....50@50&5%

Plane Irons—
Butcher's.....$5.00@$5.25 to £
Buck Bros 30%
Auburn "Thistle..... ....
Ohio..... } 35&2%
Landusky..... }
S. & I. J. White.....25%

Plates.

Felloe .....₱ ℔ 6¢@6½¢

Pliers and Nippers—

Button's Patent.....30&10@40%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz .....20&10@33⅓%
Humason & Beckley Mfg. Co..50@50&10%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel.....25%
P. S. & W. Cast Steel 50%
P. S. & W. Tinners' Cutting Nippers, add 5% dis 10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₱ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—

Regular List .....70&10@70&10&10%
Disston's.....45&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis' Inclinometers ....10&10%

Poachers.

Egg.
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....25%

Police Goods.

R. I. Tool Co., Handcuffs, $15.00₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods..... 25%

Polish, Metal.

Prestoline.....20&10%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Pokes, Animal—

Bishop's I. X. L.....₱ doz $6.00
Bishop's O. K..... .....₱ doz $5.25
Bishop's Pioneer.....₱ doz $3.75
Bishop's American.....₱ doz $2.75

Polish, Stove.

Joseph Dixon's.....₱ gro $6.00,10%
Gem.....₱ gro $4.50, 10%
Gold Medal.....₱ gro $6.00, 25%
Mirror .....₱ pro $6.00, —%
Lustro .....₱ gro $4.75
Ruby.....₱ gro $3.75
Rising Sun, 5 gro lots .....₱ gro $5.50
Dixon's Plumbago..... ..₱ ℔ $5.00
Boynton's Noon Day, ₱ gro 13.00
Parlor Pride Stove Enamel..₱ gro $ cans
Yates' Liquid, 2 3 5 10 gal....8¢ ₱ gal ...$0.90 .80 .70 .60
Yates Standard Paste Polish, 10-℔ cans, ₱ ℔ 15¢
Jet Black .....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.50
Diamond O. K. Enamel.....₱ gro $19.00
Bonnell's Liquid Stove Polish..₱ gro $9.00
Bonnell's Paste Stove Polish..₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans .....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans .....12½¢
Nickel Plate Paste .....₱ gro $6.00

Poppers, Corn—

Round or Square, 1 qt..₱ gr $10.00@10.50
Round or Square, 1½ qt ..₱ gr $15@15.50
Round or Square, 2 qt..₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.

Glue—
Tinned.....40%
Enameled.....40&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy" 50%

Presses.

Fruit and Jelly—
Enterprise Mfg. Co.....20&10@30%
Henis .....₱ doz $2.50
Shepard's Queen City 40%

Pruning Hooks and Shears.—See Shears.

Pullers.

Nail.
Curtiss Hammer..... .....₱ doz $9.00
Giant, No. 1.....₱ doz. $18.00, 10%
Giant, No. 2.....₱ doz, $15.00, 10%
Pelican.....₱ doz, $9.00, 25%

Pulleys—

Hot House, Awning, &c.....60&10%
Japanned Screw..... .....60&10%
Brass Screw.....60&10%
Japanned Side.....60%&10%
Japanned Clothes Line.....60&10%
Empire Sash Pulley.....55@60%
Moore's Sash, Anti-Friction.....50%
Hay Fork, Solid Eye, $4.00: Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70 .....50&10&5%
Hay Fork, "F" Common and Pat. Bushed 20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating ...60%
Shade Rack 45%
Tackle Blocks.....See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00..... 40

Pumps—

Cistern, Best Makers .....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper Goods..70@70&5%

Punches—

Saddlers' or Drive, good, ₱ doz...60@65%
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co's Springfield Socket.50&5%
Spring, good quality....₱ doz $2.50@2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring and Check ..40%
Solid Tinners', P.S.&W.Co., ₱ doz $1.44, 55%
Tin'rs' Hollow Punches P.S.&W.Co.20&2%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—

Sliding Door, Wr't Brass, ₱ ℔ 35¢.....15%
Sliding Door, Bronzed Wr't Iron . ₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%
Barn Door, Light. In. ½ ⅝ ¾
Per 100 feet.....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 feet....	$2.15	2.70	3.25..net

Terry's Steel Rail, ₱ foot.....4½¢
Victor Track Rail, 7¢ ₱ foot.....50&2%
Carrier Steel Rail, ₱ foot .....4½¢
Moore's Wrought Iron.....25%

Rakes—

Cast Steel, Association goods 70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable .....70@70&5%
Gibbs Lawn Rake.....$12.00, 50&1
Canton Lawn Rake..... $9.00, 50&10
Ft. Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00..... .....25%

Razor

J. R. Torrey Razor Co 20%
Wostenholme and Butcher, $10.00 to £. 10%
Jordan's AA1, list Nov. 1, 1889.....50%
Jordan's Old Faithful, list Nov. 1, '89.50%
Electric.....List net

Razor Strops—See Strops, Razor.

Rings and Ringers.

Bull Rings—
Union Nut Co.....55%
Sargent's.....66%&10@70&5%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co's..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—
Top of the Hill Ringers.....₱ doz $2.00
Top of the Hill Rings.....₱ doz $1.25
Hill's Improved Ringers. . ..₱ doz $4.25
Hill's Old Style Ringers.....₱ doz $2.75
Hill's Tongs. .....₱ doz $4.50
Hill's Rings.....₱ doz bxs $2.15@2.25
Perfect Rings.....₱ doz bxs $1.60@1.70
Perfect Ringers.....₱ doz $2.15@$2.25
Blair's Hog Ringers.....₱ doz $2.25@2.50
Blair's Hog Rings.....₱ doz 90¢@$1.00
Champion Ringers..... ... ₱ doz $2.00
Champion Rings, Double.....₱ doz $2.25
Brown's Ringers.....₱ doz $2.00
Brown's Rings.....₱ doz $1.25@1.30

Rivets and Burrs—

Iron, list Nov. 17, '87.....40%
Copper.....50@50&10%

Rivet Sets—See Sets.

Rods—

Stair, Brass .....25&2%
Stair, Black Walnut .. ..₱ doz 40¢

Rollers—

Barn Door, Sargent's list .....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller 70%

Rope—

Manufacturers' prices:
Manila...½ in. and larger ₱ ℔ 15 ¢
Manila.....⅜ in. ₱ ℔ 15½¢
Manila.....¼ and 5-16 in. ₱ ℔ 15½¢
Manila Tarred Rope.....₱ ℔ 14½¢
Manila, Hay Rope.....₱ ℔ 15 ¢
Sisal...½ inch and larger ₱ ℔ 12 ¢
Sisal.....⅜ in. ₱ ℔ 12½¢
Sisal.....¼ and 5-16 in. ₱ ℔ 12½¢
Sisal, Hay Rope.....₱ ℔ 12 ¢
Sisal, Tarred Rope.....₱ ℔ 11½¢
Sisal, Medium Lathe Yarn. ₱ ℔ 11 ¢
Cotton Rope.....₱ ℔ 15@18¢ net
Jute Rope.....₱ ℔ 7½¢

1½% for cash in 10 days.

Wire—
List May 1, 1886.
Iron.....30%
Iron, Galvanized.....27½%
Cast Steel.....35%

Rules—

Boxwood.....80&10&10@80&10&10&5%
Ivory..... .....50@50&10%
Starrett's Rules and Straight Edges, Steel..... .....25&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery.

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—

Disston's Circular.....45@45&5%
Disston's Cross Cuts..... ....45@45&5%
Disston's Hand 25@25&5%

Extras sometimes given by jobbers.

Atkins' Circular Shingle and Heading 50
Atkins' Silver Steel Diamond X Cuts ℔ foot 70¢
Atkins' Special Steel Dexter X Cuts ℔ foot 50¢
Atkins' Special Steel Diamond X Cuts ℔ foot 30¢
Atkins' Champion and Electric Tooth X Cuts ℔ foot 24@25¢
Atkins' Hollow Back X Cuts. ℔ foot 18¢
Atkins' Mulay, Mill and Drag 40%
Atkins' One-Man Saw, with handles, ℔ foot 32¢
W. M. & C., Hand 30&5@30&10%
W. M. & C., Champion X Cuts, Regular ℔ foot 24@26¢
W. M. & C. X Cuts, Thin Back ℔ foot 27@29¢
Peace Circular and Mill 45&10%
Peace Hand Panel and Rip 20&10@20&10&10%
Peace Cross Cuts, Standard ℔ foot 25¢
Peace Cross Cuts, Thin Back ℔ foot 27@28¢
Richardson's Circular and Mill 45@45&10%
Richardson's X Cuts, No. 1, 30¢; No. 2, 27¢; No. 3, 24¢

Hack Saws—
Griffin's, complete 40&10@50%
Griffin's Hack Saw, Blades 40&10@50%
Star Hack Saws and Blades 25%
Diamond Hack Saws and Blades 25%
Eureka and Crescent 25%

Scroll—
Lester, complete, $10.00 25%
Rogers, complete, $4.00 25%
Barnes' Builders' and Cabinet Makers', $15 25%
Barnes' Scroll Saw Blades 35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Sets.

Awl and Tool.
Aiken's Sets, Awls and Tools, No. 20, ℔ doz $10.00 55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9 25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12, 2, $18 25%
Henry's Combination Haft ℔ doz $6.50
Brad Sets, No. 42, $10.50; No. 43, $12.50 70&10&5%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 30&10%

Nail—
Square ℔ gr., $4.00@$4.25
Round ℔ gr. $3.25
Buck Bros. 27½%
Cannon's Diamond Point ℔ gr., $12, 20%

Rivet.
Regular list 50&10%

Saw—
Stillman's Genuine ℔ doz $5.00@7.75, 40&5%
Stillman's Imita ℔ doz $3.25@5.25, 40&5@40&10%
Common Lever ℔ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00, 40&10@50%
Leach's No. 0, $8.00; No. 1, $15, 15@20%
Nash's 20&10@20&10&10%
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer 30&5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine $13.00, 50&10%
Aiken's Imitation $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star, ℔ No. 15, $5.50; 20@10@20&10@10%
Atkin's Lever ℔ doz No. 1, $6.00
Atkin's Criterion ℔ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 40&10%
Avery's Saw Set and Punch 50%
Chieftain H. R. Co.'s Superior ℔ doz $15, 50%

Scales—
Hatch, Counter, No. 171, good quality, ℔ doz $21.00
Hatch, Tea, No. 161 ℔ doz $6.75@$7.00
Union Platform, Plain $2.10@$2.20
Union Platform, Striped $2.20@2.30
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls 30@30&10%
Riehle Bros.' Platform 40%

Scale Beams—See Beams, Scale.

Scissors, Fluting 45%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.50 30&10%
Box, 1 Handle ℔ doz $4.00. 10%
Box, 2 Handle ℔ doz $6.00, 10%
Defiance Box and Ship 20&10%
Foot 50&10@60%
Ship, Common ℔ doz $3.50 net
Ship, R. I. Tool Co. 10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—
Bench, Iron 55&10@55&10&10%
Bench, Wood, Beech ℔ doz $2.25
Bench, Wood, Hickory 20&10%
Hand, Wood 25&10@25&10&5%
Lag, Blunt Point, list Jan. 1, 1890, 75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 75%
Bed 25&5%
Hand Rail, Sargent's 60%&10%
Hand Rail, H. & B. Mfg. Co. 70&10@75%
Hand Rail, Am. Screw Co. 75%
Jack Screws, Millers Falls list 50@50&5%
Jack Screws, P. S. & W. 35%
Jack Screws, Sargent 60&10@60&10&5%
Jack Screws Stearns' 40@40&10%

Cork—
Humason & Beckley Mfg. Co. 40&10@50%
Williamson's 33⅓@33⅓&5%
Howe Bros & Hulbert 35%

Machine—
Flat Head, Iron 55%
Round Head, Iron 50%

Wood—
List March 1, 1889.
Flat Head Iron 50%
Round Head Iron 40%
Flat Head Brass 45%
Round Head Brass 35%
Flat Head Bronze 45%
Round Head Bronze 35%
} Extra 5 @ 10 % often given.

Scroll Saws—See Saws, Scroll.

Scythe Snaths—See Snaths, Scythe.

Sharpeners, Knife.

Parkin s.
Applewood Handles ℔ doz $6.00, 40%
Rosewood or Cocobolo ℔ doz $9.00, 40%

Shaves, Spoke.

Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) 40&10%
Stearns' 20&10@30%
Cincinnati 25&10%

Shears—
American (Cast) Iron 75&10@75&10&5%
Pruning See Pruing Hooks and Shears.
Barnard's Lamp Trimmers ℔ doz $3.75
Tinners' 20&2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears 33⅓%
First quality C. S. Trimmers 80@80&10%
Second quality C. S. Trimmers. 80@80&10@10%
Acme Cast Shears 10&10%
Diamond Cast Shears 10%
Clipper 10&10%
Victor Cast Shears 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Chicago Drop Forge & F. Co., Solid Steel Forged 60%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list. 60%
Electric List net

Pruning Shears and Hooks.
Disston's Combined Pruning Hook and Saw ℔ doz $18.00, 20&10%
Disston's Pruning Hook, ℔ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools 40%
Pruning Shears, Henry's Pat, ℔ doz $3.75@4.00 net
Henry's Pruning Shears, ℔ doz $4.25@4.50 net
Wheeler, M. & C. Co.'s Combination, ℔ doz $12.00, 20%
Dunlap's Saw and Chisel, ℔ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co. 60%

Tinners', &c.—
Shears and Snips (P. S. & W.) 20@25%
Snips, J. Mallinson & Co. 33⅓%

Sheaves—

Sliding Door—
M. W. Co., list July, 1888 50&10@60&5%
R. & E., list Dec. 18, 1885 55&20%
Corbin's list 60&10&2%
Patent Roller 60&10&2%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 60&2%
Moore's Anti-Friction 50%

Sliding Shutter—
R. & E. list Dec. 18, 1885 60&10&2%
Sargent's list 60&10%
Reading list 60&10&10%

Ship Tools—
L. & I. J. White 20&5%

Shoes, Horse, Mule, &c.—

Horse—
Burden's, Perkins', Phœnix, at factory. $4.00

Mule—
Add $1 ℔ keg to above prices.

Ox, Wrought—
Ton lots ℔ ₤ 9¢
1000 ₤ lots ℔ ₤ 9½¢
500 ₤ lots ℔ ₤ 10¢

Shot—
(*Eastern prices 2¢ off, cash, 5 days.*
Drop, ℔ bag, 25 ₤ $1.10
Drop, ℔ bag, 5 ₤ .20
Buck and Chilled, ℔ 25-₤ bag 1.44
Buck and Chilled, ℔ 5-₤ bag .34

Shovels and Spades—
Ames' Shovels, Spades, &c., list Nov. 1, 1885 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron 50&10%
Griffith's C. S. 60@60&10%
Griffith's Solid C. S. R. R. Goods 20%
Old Colony (Sanford Fork & Tool Co.) 35%
St. Louis Shovel Co. 20@20&7½%
Hussey, Binns & Co. 15@25%
Hubbard & Co 20@20&7½%
Lehigh Mfg. Co. 50&10%
Payne Pettebone & Son, list January, 1886 30%
Remington's (Lowman's Pat.) 30&10@40%
Rowland's, Black Iron 50&10%
Rowland's Steel 60&5@60&10%

Shovels and Tongs—
Iron Head 60&10@60&10&5%
Brass Head 60&10&10%

Sieves—
Mann's Tin Rim 50&25%
Buffalo Metallic, S. S. & Co. 50&25%
Shaker (Barler's Pat.) Flour Sifters ℔ doz $2.00; ℔ gr $21.60
Electric ℔ gr $21.00
A. & W. Sifters ℔ doz 2.00
Hunter's ℔ doz $2.00
Smith's Adjustable Sifters ℔ doz $2.00
Smith's Adjustable Milk Strainer ℔ doz $2.00
Smith's Adjustable T. & C. Strainer. ℔ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ℔ doz.	80¢	$1.00
Mesh 20, Nested, ℔ doz.	95¢	1.10
Mesh 24, Nested, ℔ doz.	$1.15	1.25

Skeins, Thimble—
Western list 75&5@75&10%
Columbus Wrt. Steel, list Jan. 3, 1889 45&10%
Coldbrookdale Iron Co. 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 35%

Slates—
School, by case 50@50&10%

Snaps, Harness, &c.—
Anchor (T. & S. Mfg. Co.) 65%
Fiten's (Bristol) 50&10%
Hotchkiss 10%
Andrews 50%
Sargent's Patent Guarded 70&10&10%
German, new list 40&10%
Covert 50&2%
Covert, New Patent 50&5&2%
Covert, New R. E. 60@10&2%
Covered Spring 60&10&10%

Snaths, Scythe.
List 50&5&2@50&10&2%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—
Cuspidors, 8½-inch, ℔ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—
Basting, Cen. Stamp, Co.'s list 70&10%
Solid Table and Tea, Cen. Stamp, Co.'s list 70&10%
Buffalo S. S. & Co. 33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).
Meriden Brit. Co., Rogers 40, 15, 10&5%
C. Rogers & Bros. 40, 15, 10&5%
Rogers & Bro. 40, 15, 10&5%
Reed & Barton 40&10%
Wm. Rogers Mfg. Co. 40, 15, 10, 5&5%
Simpson, Hall, Miller & Co. 40, 15, 10&5%
Holmes & Edwards Silver Co. 40, 15, 10, 5&5%
L. Boardman & Son 60%

Miscellaneous.
Holmes & Edwards Silver Co.:
No. 67 Mexican Silver 50&10&5%
No. 30 Silver Metal 50&10&5%
No. 24 German Silver 50&10&5%
No. 50 Nickel Silver 50%
No. 49 Nickel Silver 50&10
German Silver 50@50&5
German Silver, Hall & Elton 50&5% cash
Nickel Silver 50&5@50&10&5% cash
Britannia 60%
Boardman's Nickel Silver 50&5% cash
Boardman's Britannia Spoons, case lots 60&5% cash

Springs, Door.
Torrey's Rod, regular size ℔ doz $1.30
Gray's, ℔ gr., $20.00 20%
Bee Rod ℔ gr., $20.00 20%
Warner's No. 1, ℔ doz, $2.50; No. 2, $3.30 40&10@50%
Gem (Coil), list April 19, 1886 10%
Star (Coil), list April 19, 1886 20%
Victor (Coil) 60@60&10%
Champion (Coil) 60&10@60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75 %
Cowell's No. 1, ℔ doz, $18.00; No. 2, $15.00 50%
Rubber, complete, ℔ doz, $4.50 55&10%
Hercules 50%
Shaw Door Check and Spring 25@30@35%
Elliptic, Concord, Platform and Half Scroll 60@60&5%
Cliff's Bolster Springs 25%

Squares—
Steel and Iron, Nickel-Plated 80 &10%
Try Square and T Bevels 60&10@60&10 &10%
Disston's Try Square and T Bevels 45&10%
Winterbottom's Try and Miter 30&10%
Starrett's Micrometer Caliper Squares, 25%
Avery's Flush Bevel Squares 40%
Avery's Bevel Protractor 50%

Squeezers.

Fodder.—
Blair's ℔ doz $2.00
Blair's "Climax" ℔ doz $1.25

Lemon—
Porcelain Lined, No. 1 ℔ doz $6.00, 25&30%
Wood, No. 2 ℔ doz $3.00, 35%
Wood, Common ℔ doz $1.70@1.75
Dunlap's Improved ℔ doz $3.75, 20%
Sammis No. 1, $5.00; No. 2, $9; 12, $18 ℔ doz 25&10%
Jennings' Star ℔ doz $2.50
The Boss ℔ doz $2.50
Dean's Nos. 1, ℔ dos $6.50; 2, $3.35; 3, $1.90
Little Giant 50@50&5%
King 40&5%
Hotchkiss Straight Flash ℔ doz $12.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—
Barbed, ½ in. and larger ℔ ₤ 7@7½¢
Barbed, ⅝ in. ℔ ₤ 8@8½¢
Fence Staples, Galvanized. } Same price as B'rb Wire.
Fence Staples, Plain. } See Trd. Rep.

Steelyards 40&10@50%

Stocks and Dies—
Blacksmith's
Waterford Goods 30&5@30&10%
Butterfield's Goods 30&5@30&10%
Lightning Screw Plate 25@30%
Reece's New Screw Plates 33⅓&5@40%
Reversible Ratchet 30 %
Gardner 25%

Stops, Bench.
Morrill's ℔ doz $9, 50%
Hotchkiss's ℔ doz $5, 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25 &10&5%
McGill's ℔ doz $3 10%
Cincinnati 25&10%

Stone—
Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone ℔ ₤ 2½¢
Washita Stone, Extra ℔ ₤ 20@21¢
Washita Stone, No. 1 ℔ ₤ 15@16¢
Washita Stone, No. 2 ℔ ₤ 11@12¢
Washita Slips, No. 1, Extra ℔ ₤ 37@40¢
Washita Slips, No. 1 ℔ ₤ 25@26¢
Arkansas Stone, No. 1, 4 to 6 in ℔ ₤ $1.50
Arkansas Stone, No. 1, 6 to 9 in ℔ ₤ $1.85
Turkey Oil Stone, 4 to 8 in ℔ ₤ 40¢
Turkey Slips ℔ ₤ $1.00@1.50
Lake Superior, Chase ℔ ₤ 16¢
Lake Superior Slips, Chase ℔ ₤ 31@32¢
Seneca Stone, Red Paper Brand ℔ ₤ 18@20¢
Seneca Stone, High Rounds ℔ ₤ 20@25¢
Seneca Stone, Small Whets ℔ gro $24.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.
Cast Steel, Polished ℔ doz $2.25
Cast Iron, Steel Points ℔ doz 80¢
Socket ℔ doz $1.75
Millard's 25@25&10%

Strops, Razor—
Genuine Emerson 60@60&5%
Imitation " ℔ doz $2.00, 20&10&5%
Torrey's 20%
Badger's Belt and Com ℔ doz $2.00
Lamont Combination ℔ doz $4.00
Jordan's Pat Padded, list Nov. 1, '89 50%
Electric List net

Stuffers or Fillers, Sausage—
Miles' "Challenge," ℔ doz $20, 50&50&5%
Perry ℔ doz, No. 1, $15.00; No. 0, $21.00 50&5&50&10%
Draw Cut No. 4, each $30.00 20%
Enterprise Mfg. Co. 20&10&30%
Silver's 40&10%

Sweepers, Carpet.
Bissell No. 5 ℔ doz $17.00
Bissell No. 7 New Drop Pan ℔ doz $19.00
Bissell, Grand ℔ doz $36.00
Grand Rapids ℔ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic ℔ doz $15.00
Jewel ℔ doz $17.00
Improved Parlor Queen, Nickeled ℔ doz $27.00
Japanned ℔ doz $24.00
Excelsior ℔ doz $22.00
Garland ℔ doz $18.00
Parlor Queen ℔ doz $24.00
Housewife's Delight ℔ doz $15.00
Queen ℔ doz $16.00
Queen, with band ℔ doz $18.00
King ℔ doz $30.00
Weed, Improved ℔ doz $18.00
Hub ℔ doz $16.00
Cog-Wheel ℔ doz $16.00
Conqueror ℔ doz $22.00
Easy ℔ doz $22.00
Monarch ℔ doz $22.00
Goshen ℔ doz $21.00
Advance ℔ doz $18.00
Ladies' Friend, No. 1, ℔ doz, $15.00; No. 2 ℔ doz $16.00
American ℔ doz $15.00
Grand Republic ℔ doz $35.00

Tacks, Brads, &c.—

List Oct. 19, 1889, extra 10&2 % cash.

Carpet Tacks—
Americap Iron, Blued 70%
American Iron, Tinned or Cop'd 70%
Steel, Plain or Bright 70%
Steel Tinned or Coppered 70%
Swedes Iron, Blued 70%
Swedes Iron, Tinned or Co.p'd 70%
American Iron Cut Tacks 67½%
Swedes Iron Upholst'rs' Tacks, S. S. 70%
Swedes Iron Upholst'rs' Tacks, Tinned, S. S. 70%
Swedes Iron Card and Upholsterers' Tacks, Lanc 66⅔%
Swedes Iron Card and Upholsterers' Tacks, Tinned, Lanc 66⅔%
Gimp and Lace Tacks, Lanc., Swedes Iron. 66⅔%
Gimp and Lace Tacks, Lanc., Swedes Iron, Tinned 66⅔%
Gimp and Lace Tacks, S. S. 70%
Gimp and Lace Tacks Tinned, S. S. 70%
Swedes Iron Basket or Trimmers' Tacks, Lanc. 66⅔%
Miners' Tacks, S. S 70%
Bill-Posters' or Railroad Tacks, Lanc., Swedes 66⅔%
Bill-Poster's' or Railroad Tacks, S.S. 70%
Copper Tacks 50%
Copper Finish. & Trunk Nails 50%
Cigar Box Nails 50%
Zinc Glaziers' Points 50%
Picture-Frame Points 50%
Looking-Glass Tacks 50%
Brush Tacks 50%
Tin-Capped Trunk Nails 60%
Finishing Nails 65%
Trunk & Clout Nails, Black & Tin'd 66⅔%
Common and Patent Brads 60%
Hungarian Nails 62½%
Basket and Chair Nails 62½%
Leathered Carpet Tacks 40%

Miscellaneous—
Double-Pointed 82½%
Wire Carpet Nails 50&10%

Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50&10%

Tap Borers—See Borers, Tap.

Tapes, Measuring—

American.....33⅓@33⅓&5%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale- Steel

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears, Tinners', &c.

Tinware—

Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10&5%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.

Coopers'—
Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves, Cincinnati Tool Co.....20%
Lumber.
Ring Peavies, "Blue Line"...₱ doz $20.00
Ring Peavies, Common.....₱ doz $18.00
Steel Socket Peavies.....₱ doz $21.00
Mall Iron Socket Peavies.....₱ doz $19.00
Cant Hooks, "Blue Line"...₱ doz $16.00
Cant Hooks, Common Finish..₱ doz$14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₱ doz $14.5
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₱ doz $18.00
Saw.
Atkins' Perfection.....₱ doz $12.00
Atkins' Excelsior.....₱ doz $6.00
Atkins' Giant.....₱ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters — See Lifters, Transom.

Traps—

Game—
Newhouse.....40@40&5%
Oneida Patten.....70&10%
Game, Blake's Patent.....40&10&5%

Mouse and Rat—
Mouse Wood,Choker, ₱ doz holes, 11@12¢
Mouse, Round Wire.....₱ doz $1.50, 10%
Mouse, Cage, Wire.....₱ doz $2.50, 10%
Mouse,Catch-'em-alive....₱ dz $2.50 15%
Mouse, Bonanza.....₱ gr $10.00
Mouse Delusion.....₱ gr $15.00
Rat, Decoy.....₱ gr $10.00, 10%
Ideal.....₱ gr $10.00
Cyclone.....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz , 90¢ ; in full cases, ₱ doz ... 75¢
Hotchkiss Imp. Rat Killer..₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50

Trowels—

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering, 25@25&10%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Triers—

Butter and cheese.....25%

Trimmers, Spoke.

Bonney's.....₱ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'.....₱ doz $9.00, 20%
Cincinnati.....25%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—
See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ½ ℔ Balls	26¢	34¢
No. 12, ¼ and ½ ℔ Balls	25¢	33¢
No. 18, ¼ and ½ ℔ Balls	22¢	32¢
No. 24, ¼ and ½ ℔ Balls	22¢	32¢
No. 36, ¼ and ½ ℔ Balls	20¢	31¢

No. 264, Mattrass, ¼ and ½ ℔ Balls.52@54¢
Chalk Line, Cotton, ½ ℔ Balls.....25¢
Mason Line, Linen, ½ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine).....15½¢
3-Ply Hemp, 1 ℔ Balls.....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls.....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔ ..15¢@16¢
2, 3, 4 and 5-Ply Jute, ½ ℔ Balls.....10¢
Wool.....6½¢@8½¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

Vises—

Solid Box.....50&10@50&10&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....30%
Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....66⅔&10%
Hopkins'.....₱ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Combination Hand Vises.....₱ gr $42.00
Cowell Hand Vises.....30%
Bauer's Pipe Vises.....10%
Cincinnati.....20&10%

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.

Cast Iron, Hollow—
Stove Hollow-Ware—
Ground.....55&5@60&5%
Unground.....65&10@65&10&5%
White Enameled-Ware—
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Tinned Boilers and Saucepans.....40&5%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Enameled—
Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%
Kettles—
Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.....	$2.00	$2.25
Wash-Basins, 12 in.....	2.25	2.75
Keelers, 11½ in.....		4.00
Cuspidors.....		8.0C
Spittoons, "Daisy," 8 in....	4.00	4.5C
Peck Measure.....	4.00	
Half-peck Measure.....	3.50	

See also Pails.
Indurated Fiber—25%
Spittoons, No. 2, ₱ doz.....$9.00
Basins, Ringed, ₱ doz., No. 1, $4.80; No. 2, $4.20; No. 3.....$3.60
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₱ nest.....$7.50
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest.....$3.70
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest.....$2.25
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₱ set.....$4.00
Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ₱ set.....$3 00
See also *Pails*
Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.
Reed & Barton.....
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother.....
Hartford Silver Plate Co.....
William Rogers Mfg. Co.....
} 40&5%
} 40&5&5%

Washers—

Size.....	½	5-16	⅜	½	⅝	¾	1
Washers....	6½	5½	4½	3½	3	3	3

In lots less than 200 ℔, ₱ ℔, add ¼¢, 5-t boxes 1¢ to list.

Wedges—

Iron.....₱ ℔ 3½¢
Steel.....₱ ℔ 4 ¢

Weights, Sash—

Solid Eyes.....₱ ton $22.00

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.
8 in., $2.25; 10 in., $2.70; 12 in., $3.25

Wire and Wire Goods—

Iron—
Market.
Br. & Ann., Nos. 0 to 18.....
Cop'd, Nos. 0 to 18.....
Galv., Nos. 0 to 18.....
Tin'd, Tinned list Nos. 0 to 18.
} See Trade Report
Stone,
Br. and Ann'd, Nos. 16 to 18.....67½%
Bright and Ann'd, Nos. 19 to 26.67½&5%
Br. and Ann'd, Nos. 27 to 36....70&10%
Tinned.....67½%
Tinned Broom Wire.....67½@67½&5%
Galvanized Fence.....55%
Annealed Fence, Nos. 8 and 9.....65%
Annealed Grape, Nos. 10 to 14.....65%
Brass, list Jan. 18, 1884.....25%
Copper, list Jan. 18, 1884.....25%
Barb Fence.....See Trade Report
Wire on Spools.....65%
Malin's Steel and Tin'd Wire on Spools, 50%
Malin's Brass and Cop. Wire on Spools 40%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to $, 30%
Steel Music Wire, Nos. 12 to 30..55¢ ₱
Picture Wire.....New list 50%
Barb Wire Safety Guards, ₱ 1000, $9.00, 25%
Wire Clothes Lines, see Lines.
Bright Wire Goods—
Standard list.....85%
Wire Cloth and Netting.
Painted Screen Cloth, good quality, ₱ 100 sq. ft., $1.80 @ $1.90
Galvanized Wire Netting.....70@70&10%

Wire Rope—See Rope, Wire.

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&3%
Coes' "Mechanics".....50&10&3%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'.....60&10%
Lamson & Sessions' Standard.....70&10%
Goes' Pattern, Wrought.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
} 75@ 7! &10
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₱ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....60&3%
Acme, Nickeled.....50&3%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....15&10%
Cincinnati Monkey Wrenches ..15&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

List March 11, 1889, 2% cash.

Wrought Goods—

Staples, Hooks, &c., list Jan. 12, 1886, 80&15? 85%

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	62	@	64
Linseed, City, boiled.....	64	@	66
Linseed, Western, raw.....	—	@	60
Lard, City, Extra Winter..	53	@	54
Lard, City, Prime, present make.....	52	@	53
Lard, City, Extra No. 1.....	45	@	48
Lard, City, No. 1.....	42	@	44
Lard, Western, prime.....	52	@	—
Cotton-seed, Crude, prime.	27½@		28
Cotton-seed, Crude, off grades.....	24	@	27
Cotton-seed, Summer Yellow, prime.....	33½@		34
Cotton seed, Summer Yellow,-off grades.....	31	@	33
Sperm, Crude.....	65	@	67
Sperm, Natural Spring.....	..	@	..
Sperm, Bleached Spring....	..	@	..
Sperm, Natural Winter.....	75	@	78
Sperm, Bleached Winter...	80	@	83
Whale, Crude.....	40	@	
Whale, Natural Winter.....	46	@	..
Whale, Bleached Winter...	48	@	..
Whale, Extra Bleached.....	51	@	..
Sea Elephant, Bleached Winter.....	58	@	60
Menhaden, Crude, Sound...	22	@	23
Menhaden, Crude, Southern	..	@	..
Menh den, Light Pressed..	27	@	28
Menhaden, Bleached W'ter.	32	@	35
Menhaden, Extra Bleached	35	@	36
Tallow, City, prime.....	..	@	46
Tallow, Western, prime....	..	@	..
Cocoanut, Ceylon.....	5¾@		5¾
Cocoanut, Cochin.....	6	@	5¾
Cod, Domestic	31	@	32
Cod, Foreign.....	33	@	34
Red Elaine	33	@	35
Red Saponified..... ₱ ℔	4¼@		4½
Bank.....per gal	25	@	..
Straits.....	27	@	..
Olive, Italian, bbls..... .	92½@		95
Neatsfoot, prime	62½@		75
Palm, prime, Lagos....₱ ℔	5¼@		05½

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test,.. .....per gal	8	@	9
Black, 29 gravity, 15 cold test.....	8½@		9½
Black, 29 gravity, summer.	6	@	7
Cylinder, light, filtered.....	15	@	20
Cylinder, dark, filtered ..	14	@	20
Cylinder, dard, st'm refined	10	@	18
Paraffine, 23½ @ 24 gravity.	11	@	12
Paraffine, 25 gravity.....	10	@	11
Paraffine, 28 gravity.....	8½@		9
Paraffine, red, 21 @ 22 gr'ty	14	@	14½
Paraffine, red,22½@23 gr'ty	12	@	13

Paints and Colors.

Barytes, Prime White..... ₱ ton.	$22.00	@	$22.50
Barytes, Amer. refined...	20.00	@	....
Barytes, Amer. No. 1....	18.00	@	....
Barytes, Amer. No. 2....	16.00	@	....
Barytes, Amer., off-color.	13.00	@	15.00
Blue, Celestial..... ₱ ℔	5½@		7½
Blue, Chinese	45	@	50
Blue, Prussian.....	20	@	35
Blue, Ultramarine	7	@	25
Brown, Spanish	½@		1
Brown, Vandyke, Amer..	3	@	3½
Brown, Vandyke, English	6	@	8
Black, American Drop....	8	@	10
Black, English Drop.....	12	@	14
Black, Frankfort, Drop...	5	@	18
Black, Lamp, common...	12	@	18
Black, Lamp, medium....	19	@	25
Black, Lamp, prime.....	27	@	33
Carmine, No. 40, in bulk.	3.10	@	..
Carmine, No. 40, in boxes or barrels	3.20	@	..
Carmine, No. 40, in ounce bottles.....	4.20	@	..
Chalk, in bulk.... ₱ ton.	2.75	@	3.00
Chalk, in bbls.. ₱ 100 ℔	33	@	45
China Clay, English.... ₱ ton.	13.50	@	18.00
China Clay, Southern...	10.00	@	11.50
Cobalt Oxide, prep'd.....	2.90	@	....
Cobalt Oxide, black..... lots 100℔.	2.60	@	....
Cobalt, Oxide, black..... less 100℔.	2.65	@	....
Crocus Martus, Engl. ₱ ℔.	1¼@		2½
Crocus, American	1½@		2½
Green, Paris, in bulk....	12	@	12½
Green, Paris, 170 @ 175 ℔ kegs.....	12½@		13
Green, Paris, small pack.	15	@	20
Green, Chrome, ordinary	8	@	11
Green, Chrome, extra....	12	@	13
Green, Chrome, pure....	22	@	25
Lead, White, dry in bbls		@	6¾
Lead, White, dry, in kegs.		@	7¼
Lead, White, in oil, keg lots 500 ℔.....		@	
Lead, White, in oil, 25 ℔ tin pails.....		@	7¾
Lead, White, in oil, 12½ ℔ tin pails.....		@	8¼
Lead, White,in oil, 1 to 5 ℔ assorted tins.....		@	9¾
Lead, Red, pkgs. 500 ℔.....		@	7
Lead, Red, kegs.....		@	7¼
Litharge (pow'd), kegs.....		@	7¼

TERMS, &C.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice. Rebates, payable June 30 and December 31, if quantities specified are taken prior to those dates: To buyers of 3 tons and less than 10 tons, 4 %; 10 tons and less than 25 tons, 6¼; 25 tons and less than 50 tons, 8%; 50 tons and upward, 10%.

Ocher, Rochelle.....	1.35	@	1½
Ocher, French Washed....	1½@		2½
Ocher, German Washed...	1½@		3
Ocher, American.....	½@		1¼
Orange Mineral, English..	8½@		9½
Orange Mineral, French...	9	@	9¾
Orange Mineral, German ..	8½@		9½
Orange Mineral, American .	8	@	8½
Paris White, English Cliff-stone.....	1.00	@	1.10
Paris White, American....	60	@	80
Red, Indian, English.....	5½@		7
Red, Indian, American....	2	@	6
Red, Turkey.....	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American.. ₱ 100 ℔.	1.00	@	1.25
Red, Venetian, English....	1.00	@	1.50
Sienna, Italian, Burnt and Powd. ₱ ℔	5	@	6¼
Sienna, Ital., burnt Lumps	1½@		3½
Sienna, Ital., Raw, Powd..	5	@	6½
Sienna, Ital., Raw Lumps..	2	@	3½
Sienna, American, Raw....	1½@		1¾
Sienna, American, Burnt and Powdered.....	1½@		1¾
Talc, French.....	1½@		1½
Talc, American..... ..	½@		1
Terra Alba, Fr'ch. ₱ 100 ℔	72½@		80
Terra Alba, English	80	@	85
Terra Alba, American No.1	70	@	75
Terra Alba, American No.2	38	@	40
Umber, Turkey, Bnt. and Powd., ... ₱ ℔	3½@		4
Umber, Turkey, Bnt.Lmps.	2¾@		3
Umber, Turkey, Raw and Powdered.....	3½@		4
Umber, Turkey, R'w Lmps	2½@		3¾
Umber, Turkey,Bnt. Amer.	1½@		1¾
Umber, Turkey, R'w Amer.	1½@		1¾
Yellow, Chrome.....	10	@	25
Vermilion, Americ. Lead..	11½@		13
Vermilion, Quicks'er, bulk.	68	@	—
Vermilion, Quicks'er, bags.	69	@	—
Vermilion, Quicksilver, smaller pkgs.....	..	@	73
Vermilion, English Import	—	@	85
Vermilion, Imitation, Eng.	8	@	25
Vermilion, Trieste...	75	@	77
Vermilion, Chinese.....	85	@	90
Whiting,Common. ₱ 100 ℔	40	@	45
Whiting, Gilders'.....	50	@	60
Zinc, American, dry.... ₱ ℔	3¾@		4½
Zinc, French, Red Seal.....	..	@	7¾
Zinc, French, Green Seal..	..	@	7¾
Zinc, French, V. M. X.....	6	@	6¾
Zinc, Antwerp, Red Seal....	..	@	6¾
Zinc, Antwerp, Green Seal	..	@	7¾
Zinc, German, L. Z. O....	..	@	6¾
Zinc, V. M. in Poppy Oil,G. Seal, lots of 1 ton and over.....	10¼@		10¾
lots less than 1 ton.....	10½@		11
Zinc, V. M. in Poppy Oil, Red Seal.....	..	@	..
lots of 1 ton and over....	9½@		10
Lots of less than 1 ton....	9¾@		10¼

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades. 1 %; 25 bbls. 2 %, 50 bbls, 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese .....₱ ℔	35	@	40
Blue, Prussian.....	20	@	45
Blue, Ultramarine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome..... ...	8	@	13
Green, Paris.....	15	@	18
Sienna, Raw.....	7	@	13
Sienna, Burnt.....	7	@	13
Umber Raw.....	7	@	10
Umber, Burnt	7	@	10

Glue.

Low Grade.....₱ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	9	@	20
English.....	10	@	15
Irish...	12	@	15

CURRENT METAL PRICES.

APRIL 9, 1890.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron :	
¼ to 2 in. round and square.. 1 to 6 in. x ⅝ to 1 in.....	₩ lb 2 10 @ ....¢
Refined Iron :	
¼ to 2 in. round and square.. 1 to 4 in. x ⅜ to 1½ in.....	₩ lb 2.30 @ ....¢
4½ to 6 in. x ⅝ to 1 in	
1 to 6 in. x ¼ and 5-16	₩ lb 2.50 @ ....¢
Rods—⅜ and 11-16 round and sq..	₩ lb 2.40 @ ....¢
Bands—1 to 6 x 3-16 to No. 12.....	₩ lb 2.60 @ ....¢
"Burden Best" Iron, base price..	₩ lb 3.00 @ ....¢
Burden's "H. B. & S." Iron, base price.....	₩ lb 2 80 @ ....¢
"Ulster".....	₩ lb 3.10 @ ....¢
Norway Bars	4.00 @ ....¢
Norway Shapes	5.00 @ ....¢

Merchant Steel from Store.

	Per pound.
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots.....	2¾¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots.....	5¢

Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16.....₩ lb	3.00 @ 3.00¢	3.50 @	....¢
17 to 20.....₩ lb	3.25 @ 3 25¢	3.50 @	3.75 ¢
21 to 24.....₩ lb	3.35 @ 3.35¢	3.75 @	....¢
25 and 26....₩ lb	3.45 @	3.75 @	....¢
27..... ...₩ lb	3.55 @ 3.62½¢	4.00 @	....¢
28.....₩ lb	3.75 @ ....¢	4.25 @	....¢
	B. B.		2d qual.
Galv'd, 14 to 20, ₩ lb.	5.00 @ ...	4.75½ @	....¢
Galv'd, 21 to 24, ₩ lb.	5.37½ @ ...	5.12½ @	....¢
Galv'd, 25 to 26, ₩ lb.	5.75 @ ...	5.50 @	....¢
Galv'd, 27..... ₩ lb.	6.12½ @ ...	5.85½ @	....¢
Galv'd, 28..... ₩ lb.	6,50 @ ...	6.23 @	....¢
Patent Planished.....	₩ lb A 10¢	B, 9¢	
Russia.....	₩ lb 9½¢ @ 10¢		
American Cold Rolled B. B.....	₩ lb 5¢ @ 7¢		
Craig Polished Sheet Steel.....	₩ lb, 8¼¢		

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast.....	₩ lb 16 ¢
Best Double Shear.....	₩ lb 15 ¢
Blister, 1st quality.....	₩ lb 12 ¢
German Steel, Best.....	₩ lb 10 ¢
2d quality.	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality.....	₩ lb 15 ¢
2d quality.....	₩ lb 14 ¢
3d quality.....	₩ lb 12½¢

METALS.

Tin.

	Per lb
Banca, Pigs.....	23 ¢
Straits, Pigs.....	22½¢
English, Pigs.....	23 ¢
Straits in Bars.....	23¼¢

Tin Plates.

Charcoal Plates.—Bright.

			Per box.
Melyn Grade.....	IC, 10 x 14..	@	$6 25
" "	... .IC, 12 x 12.	@	6.50
" "	... ...IC, 14 x 20..	@	6.25
" "	.....IC, 20 x 28,.	@	12,75
" "	... ...IX, 10 x 14..	@	7 75
" "	... ...IX, 12 x 12..	@	8.00
" "	....IX, 14 x 20..	@	7.75
" "	.....IX, 20 x 28,.	@	15.50
" "	.....DC, 12½ x 17.. ..	@	5.75
" "	.....DX, 12½ x 17..	@	7.25
Calland Grade.....	IC, 10 x 14,.	@	6.25
" "	.....IC, 12 x 12..	@	6.50
" "	.....IC, 14 x 20.. ..	@	6.15
" "	.....IX, 10 x 14.. ..	@	7.40
" "	.....IX, 12 x 12..	@	7.65
" "	.....IX 14 x 20,.	@	7.40
Allaway Grade.....	IC, 10 x 14.. ...	@	5.35
" "	.. ...IC, 12 x 12..	@	5.50
" "	.....IC, 14 x 20..	@	5.35
" "	.....IC, 20 x 28..	@	10.75
" "	.....IX, 10 x 14..	@	6.50
" "	.....IX, 12 x 12..	@	6.65
" "	..... IX, 14 x 20..	@	6.50
" "	.....IX, 20 x 28..	@	13.25
" "	...DC, 12½ x 17..	@	5.00
" "	. .DX, 12½ x 17.. 6 00	@	6.00

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20,.	....	@	$5.12½
10 x 20..	....	@	7.25
20 x 28,.	...	@	10.25
IX, 10 x 14, 14 x 20..	....	@	6.00
BV Grade.—IC, 10 x 14, 14 x 20,.	....	@	4.87½

Charcoal Plates.—Terne.

Dean Grade.—IC, 14 x 20..	....	@	$5.00
20 x 28.....	...	@	10,00
IX, 14 x 20.....	....	@	5.80
20 x 28.....	....	@	11.60
Abecarne Grade.—IC, 14 x 20...	....	@	4.85
20 x 28...	....	@	9.87
IX, 14 x 20....	....	@	5.8
20 x 28...	....	@	11.60

Tin Boiler Plates.

XX, 14 x 26.....112 sheets.....	$13.00 @	$13.00
XX, 14 x 28.....112 sheets....	.... @	13 25
XXX, 14 x 31.....112 sheets	@	14.75

Copper.

DUTY: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.

Ingot.

Lake.....	@ 15 ¢
Baltimore Grade.....	@ 13½¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1889, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		20	22	22	23	24	25	28	30
30	72		22	22	22	23	25	27	31	...
36	96		22	22	22	24	26	30	33	....
36	96		22	22	23	25	27	31	35	....
48	96		22	22	24	26	28	32	....	....
48	96		22	22	25	27	29	33	....	....
60	96		22	22	27	29	34	....	....	....
60	96		22	23	28	31	....	....	....	....
84	96		23	24	29	33	....	....	....	....
84	96		24	25	30	35	....	....	....	....
Over 84 in. wide			25	27	...	....	....	....	....	....

All Bath Tub Sheets.....	16 oz.	14 oz.	12 oz.	10 oz
Per pound....	$0.25	0.27	0 29	0.32

Bolt Copper, ⅝ inch diameter and over, per pound..... 22¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats.

	Per pound.
14 ounce to square foot and heavier.....	26¢
12 ounce and up to 14 ounce to square foot.....	27¢
10 ounce and up to 12 ounce.....	29¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each..... 8¢

Tinning sheets on one side, 30 x 60 each ..... 30¢

For tinning boiler sizes, 9 in (sheets 14 in. x 60 in.), each. ..... 15¢

For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each ..... 12¢

For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each..... 12¢

Tinning sheets on one side, other sizes, per square foot..... 2½¢

For tinning both sides double the above prices.

Planished Brass and Copper.

14 x 48.

14 and 16 oz. and heavier..31¢. By the case...30¢ ₩ lb

12 oz. and lighter.....33¢. By the case...32¢ ₩ lb

24 x 48 and 30 x 60.

14 and 16 oz. and heavier..44¢. 12 oz.....37¢ ₩ lb

Seamless Brass and Copper Tubes.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	37	33	30	29	28	27	24
15	13	38	33	31	30	29	28	25
16	14	39	34	32	31	30	29	25
17	15	40	35	33	30	31	30	26
18	16	42	36	34	32	31	30	27
19	17	43	37	35	34	33	32	29
20	18-19	44	39	37	36	35	34	31
21	20	46	41	39	38	37	36	34
22	21	48	42	40	39	38	37	36
23	22	50	44	42	41	40	39	39
24	23	53	46	44	43	41	40	41
25	24	56	49	46	45	44	43	45

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch.....	45¢
Plain, 5-16 inch.....	45¢
Plain, ¼ inch.....	60¢
Plain, 3-16 inch.....	$1.00
Plain, ⅛ inch.....	1.50
Fancy Tubing, Brass, to No. 20, inclusive.....43¢ ₩ lb	
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list.....	25 @ ... %

Roll and Sheet Brass.

Discount from list..... 25 %

High Brass Rods.

Over 1 inch diameter..	27¢
½ inch to 1 inch diameter, both inclusive.....	24¢
No. 8 and less than ¼ inch diameter.....	26¢
Smaller than No. 8.....	30¢

Hexagon, Octagon and Square, 2¢ ₩ lb advance over Round Rods.

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	6½¢
"Bertha"	9¢

Zinc.

Duty: Sheet, 2½¢ ₩ lb.

600 lb casks.....	6½¢
Per lb	7½¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 3¢ ₩ lb.

American	4½¢
Newark	4½¢
Bar.....	4½¢
Pipe, subject to trade discount....	6 ¢
Tin-Lined Pipe, subject to trade discount....	15¢
Block Tin Pipes, subject to trade discount.....	45¢
Sheet, subject to trade discount.....	6½¢

Solder.

½ @ ½ (Guaranteed)... .... 14½¢

Extra Wiping ..... 12½¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson.	₩ lb 28¢
Hallett's	" 22¢

ALUMINUM.

Prices in Ingots.

$2.00 ₩ lb in lots of 1000 lb and over.

$2.25 ₩ lb in lots of 500 lb and over.

$2.50 ₩ lb in lots of 100 lb and over.

Prices Per Pound on Rolled Sheets.

(Brown & Sharpe, Standard Gauge.)

Wider than.....	2 in.	10 in.	14 in.	18 in.	22 in.
And including.....	10 in.	14 in.	18 in.	22 in.	24 in.
Up to No. 20 inclusive...	$2.50	$2.60	$2.80	$3.00	$3.20
Nos. 21, 22, 23 and 24....	2.60	2.70	2.90	3 10	3.30
Nos. 25 and 26.....	2.70	2.80	3.00	3.20	3.40
Nos. 27 and 28.....	2.80	2.90	3.10	3.30	3.50

Sheets, thinner than No. 28 gauge and wider than 24 inches, special prices not less than $5 per pound.

Add 30 cents per pound for sheets cut to particular widths and lengths.

Sheets rolled to .001 in. and under, 50 cents per ounce.

Leaf in books, 20 cents per book; $2 per pack of 10 books, sheets 5 x 5 inches.

Aluminum Tubing.

From $4 per pound upward, according to size and thickness of walls.

Aluminum Castings.

From 50 cents upwards per pound extra over the cost of the metal in ingots, according to the number wanted, weight, the difficulty of casting, cost of patterns, &c.

Aluminum Wire in Coils.

(Brown & Sharpe, Standard Gauge.)

	Per lb
All numbers up to No. 14 (.064 in.) inclusive.....	$3.00
Nos. 15 (.05706 in.) to 22 (.02534 in.) inclusive....	3.25
Nos. 23 (.02571 in.) and 24 (.0201 in.) inclusive....	3.50
Nos. 25 (.0179 in.) and 26 (.01594 in.) inclusive....	3.75
Nos. 27 (.014195 in.) and 28 (.012641 in.) inclusive	4.00
Nos. 29 (.011257 in.) and 30 (.010023 in.) inclusive	4.25
No. 31 (.008928 in.).....	4.50
No. 32 (.00795 in.).....	4.75
No. 33 (.00708 in.).....	5.00
No. 34 (.00630 in.).....	5.25
No. 35 (.00561 in.).....	5.75
No. 36 (.00500 in.).....	6.25
No. 37 (.00445 in.).....	7.00
No. 38 (.003965 in.).....	8.50
No. 39 (.003531 in.).....	12.00
No. 40 (.003144 in.).....	16.00

Spooling, on 1-pound spools, 15 cents per poundextra

Spooling, on 10-pound spools, 5 cents per poundextra